

THE article on this page is the second in the series "How to Select and Install Air-Conditioning Systems" written by Mr. Mabley for AIR CONDITIONING AND REFRIGERATION NEWS.

These articles or "cases" are taken from the problems Mr. Mabley meets daily, as he is chief engineer for a Detroit air-conditioning distributor. As the series progresses Mr. Mabley will discuss more in detail some of the problems met in installation procedure.

HOW TO SELECT AND INSTALL AIR-CONDITIONING SYSTEMS

By T. H. Mabley, Chief Engineer
Mechanical Heat & Cold, Inc., Detroit

Case No. 2

A Conference Room

In case No. 1, "A Single Office," we considered a very simple air-conditioning application. This served as an illustration of the general procedure in selection and installation of equipment.

Case No. 2, involves a conference room which is located on the top floor of an office building. It is frequently occupied for an hour or more by an average number of eight people.

Our first step, an analysis of the problem, shows us that the prospective purchaser is interested specifically in the item of temperature control in summer, and ventilation (introduction of fresh air) when desired.

The fact that the room is located on a top floor under a flat roof indicates that cooling is of prime importance. Furthermore, since this room will be used by men the majority of whom will be smoking while in the room, the problem of ventilation naturally increases in importance. The room is at present heated by concealed radiation, recessed in the walls. The heating performance is satisfactory and the purchaser wishes to eliminate the feature of winter humidity control.

Second step is to determine a few design limits. A study of weather records in this locality indicates that 93 degrees dry bulb and 75 degrees wet bulb is a very satisfactory average basis for outdoor summer temperature.

When the outdoor temperature does not exceed this condition the system should be able to maintain at least 80 degrees dry bulb and 50% relative humidity within the conditioned area.

For the ventilation function we should consider two conditions—one situation where we want to do a good cooling job and still introduce a fair amount of fresh air to keep the tobacco smoke content of the air down to a satisfactory point, and the second case where we wish to use the system for a so-called "purge."

In the latter instance we would want to clear the atmosphere in the room quickly after it had been occupied without necessarily providing any appreciable cooling effect.

In studying recommended requirements for ventilation in rooms under heavy smoking conditions, it may be observed that the recommended figures vary from 20 to 30 c.f.m. per person. For this case 25 c.f.m. per person should be satisfactory, which gives us a total requirement for the room of 200 c.f.m.

In checking this figure against two air changes per hour (normal infiltration) we observe that the infiltration figure of 137 c.f.m. is less than that required by the necessary fresh air calculation. This would indicate that some mechanical means of ventilation should be employed for the best results.

The third step involves the detailed heat load calculations for summer cooling. Table 1 shows the heat gain tabulation for this room.

SOLAR EFFECT

It may be observed that the item of solar effect on the roof represents the largest single item in the heat gain calculations. The factor representing the heat gain per sq. ft. of surface is a combined empirical factor which varies according to the normal heat transfer coefficient of the surface, and also depends upon the light absorption properties of the surface.

A very rough dark surface as well

New WGY Studios to Be Air Conditioned

SCHENECTADY—A new home for radio station WGY will be constructed here next spring by General Electric Co. All five broadcasting studios will be completely air-conditioned with G-E equipment.

One of the five studios will be a modern electric kitchen, complete with refrigerator, range, dishwasher, kitchen Disposal unit, and all other modern kitchen contrivances. This studio will be used for all types of homemaking broadcasts. Glass panels will make the interior visible to spectators at all times.

Another studio will be two stories high, and will be equipped with a balcony for spectators. The remaining three studios will be average size, and will be used for rehearsals and auditions as well as regular broadcasts.

A control room will adjoin each studio, and will be connected to the master control room.

as one having a high heat transfer factor would have also a high total factor for sun effect. Conversely, a light smooth surface or one having a low factor would show a low solar radiation factor.

In this case the roof is a dark tar and gravel roof. The ceiling is furred and is hung level with the bottom of the roof beams. If this furred space could be ventilated, the total heat gain figure could be reduced, but the building construction in this case does not have the proper space for this arrangement. We might at least consider some means of insulation installed (possibly) above the dropped ceiling.

However, for the purpose of arriving at some plan of installation we will proceed with the fourth step, which is the selection of equipment.

It is obvious that the job could best be accomplished by two room cabinets connected to one compressor. The two cabinets should have a combined capacity of 22,282 B.t.u. or greater at a refrigerant temperature that will bring the ratio of sensible heat to total heat closest to our calculated figure.

In this case, referring to manufacturers catalogs, we are able to select two cabinets to give the performance required at 44 degrees refrigerant temperature and a compressor that gives an equivalent output at 41° suction gas temperature.

The selected units are equipped with a blower, filter, and direct expansion coil. The units are also of the design that provides for a connection to the outside for fresh air intake.

FRESH AIR DAMPER

This outside air connection is provided with a regulating damper so that by manual adjustment from the room any desired proportion of fresh and recirculated air may be brought through the conditioner. This will permit drawing in 100% fresh air at any time that a quick refreshing of the room air is desired.

The ideal arrangement (if the different units are available in the same type cabinets) would be to use one unit for intake of fresh air and the other for exhaust when the units were being used for ventilation only. The use of filters on these units is for the purpose of removing dust particles and other foreign matter from the air, but they cannot be relied upon to remove tobacco smoke.

Installation of this equipment is the fifth step. Installation of the equipment in this problem involves an arrangement of equipment within the space occupied by the purchaser. This means that all equipment must be located on the same floor.

For this reason the compressor is located in the closet adjacent to the conditioned room. Refrigerant lines can easily be brought behind the base board (which must be extended out from the wall for this purpose) and then carried up to the ceiling in the wash room and across the passage space, being concealed behind the arch, and on into the closet space.

The drains from each unit which are to carry condensate from the cooling coil may also be carried along with the refrigerant piping and then where the drain line comes into the lavatory it may be connected to an ejector located in the waste water line from the compressor. In this way the condensate is "lifted" to a point above the level of the drain pans in the units.

The compressor should be enclosed in some manner to form a soundproof compartment. In making this enclosure care should be taken to provide some auxiliary water cooling of the motor if the installation uses an air-cooled motor on the compressor.

Location of Equipment and Lines

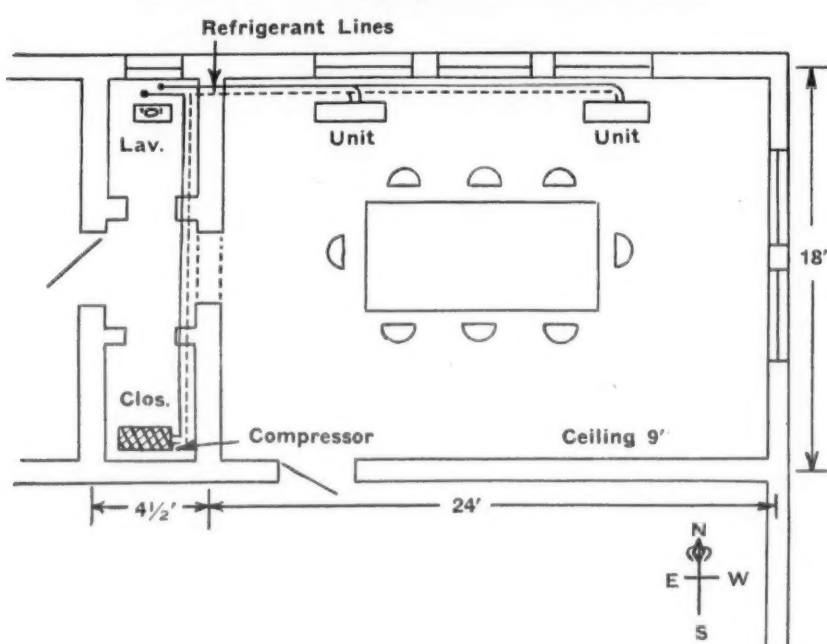


Fig. 1 shows the location of the various pieces of equipment, and the refrigerant and drain lines.

Table 1—Heat Gain Calculations

| Sensible Heat Gains: | |
|--|---------------|
| Walls: | |
| North—171 sq. ft. x .32 x 13° | 711 B.t.u. |
| East—132 sq. ft. x .32 x 23° | 985 B.t.u. |
| (Temperature difference increased for radiation effect.) | |
| Windows: | |
| North—45 sq. ft. x 1.13 x 13° | 661 B.t.u. |
| East—30 sq. ft. x 1.13 x 13° | 441 B.t.u. |
| (Sun effect negligible at noon.) | |
| Partition—293 sq. ft. x .42 x 10° | 1,231 B.t.u. |
| Doors—76 sq. ft. x .45 x 10° | 365 B.t.u. |
| Floor—455 sq. ft. x .32 x 10° | 1,456 B.t.u. |
| Ceiling—455 sq. ft. x 14 B.t.u. per sq. ft. | 6,370 B.t.u. |
| (Factor calculated for 9 A.M. with 3-hour time lag.) | |
| Lights—300 watts x 3.4 B.t.u. per watt | 1,020 B.t.u. |
| Occupancy—8 people x 220 B.t.u. per person | 1,760 B.t.u. |
| Fresh Air—200 x 1.03 x 13° | 2,678 B.t.u. |
| | 17,678 B.t.u. |
| Latent Heat Gains: | |
| Occupancy—8 people x 220 B.t.u. per person | 1,020 B.t.u. |
| Fresh Air—200 x .64 x (104—76) grains | 3,584 B.t.u. |
| | 4,604 B.t.u. |
| Total Heat Gains: | |
| Sensible heat plus Latent heat | 22,282 B.t.u. |
| Ratio = $\frac{\text{Sensible Heat}}{\text{Total Heat}}$ | = .80 |

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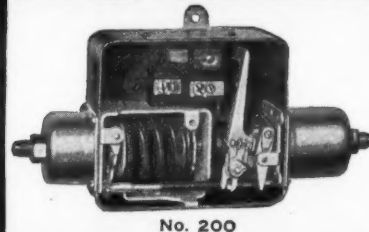
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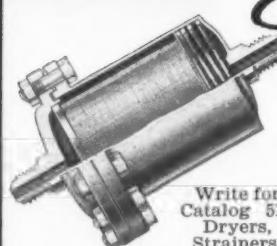
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VOL. 20, No. 3, SERIAL NO. 409
ISSUED EVERY WEDNESDAY

Entered as second-class
matter Aug. 1, 1927

DETROIT, MICHIGAN, JANUARY 20, 1937

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FTC Order Hits Agreements on Uniform Terms

Furniture Dealer Group Is Ordered to Cease "Collective Action"

WASHINGTON, D. C.—The Federal Trade Commission has ordered the Retail Furniture Dealers' Association of St. Louis to "cease and desist" from certain unfair trade practices in the interstate sale of furniture and allied products, including electric refrigerators and radios. Particularly, the FTC ordered association members to cease collective action to impose a separate, uniform carrying charge on installment accounts "in addition to the advertised cash price for merchandise sold on installment or deferred payment plans."

In connection with this policy, the FTC found that certain members of the association, without authority from the association itself, had interviewed manufacturers, jobbers, and wholesalers in the trade area in an effort to persuade them to sell only to retail dealers who imposed such a charge. These manufacturers and distributors were led to believe, the commission said, that the association itself was trying to stop their sales to dealers not imposing the regular carrying charge.

The FTC order related to selling methods and policies practiced between Aug. 1, 1933, and May 27, 1935, the period in which the association members operated under an NRA code. These methods and practices, the commission found, tended substantially to increase the ultimate cost to the purchaser.

Among the policies and practices barred by the commission's order are:

"The practice that no sales be made by manufacturers, distributors, wholesalers, or jobbers directly to their own employees, except for the latter's personal use; nor to contractors, institutions, hotels, apartment houses, or large industrial plants.

"That no orders shall be accepted by manufacturers or jobbers from dealers in other cities for delivery in St. Louis, or East St. Louis, Ill.

"That requests from consumers to buy merchandise from such manufacturers and dealers to be billed through a retailer be refused, and that such consumers be required to purchase from a 'regular' retail dealer.

"That no merchandise may be donated by manufacturers and dealers or placed on a consignment basis with anyone except for a short time for window or floor displays.

"That no sales or deliveries be

Air-Conditioning Sales Total \$3,657,051 In November

WASHINGTON, D. C.—Orders booked for air-conditioning systems and equipment during November totaled \$3,657,051, a decrease of 12.3% compared with the \$4,172,028 reported for October, according to figures made public this week by Director William L. Austin, Bureau of the Census, Department of Commerce. The report covers sales by 98 manufacturers in the field.

Total orders booked during the January-November period of 1936 are \$39,337,544. Of this amount, \$16,794,866 represents sales in the air-conditioning group, \$13,228,057 sales in the fan group, and \$9,314,621 sales in the unit heater group.

While sales in the air-conditioning group fell off to \$1,063,142 during November, compared to October figures of \$1,225,310, self-contained systems registered a notable increase during the month. Orders in this

(Concluded on Page 20, Column 2)

33,556 Units Sold In Cleveland Area in '36

CLEVELAND—Sales of household electric refrigerators in the Greater Cleveland area during all of 1936 totaled 33,556 units, an increase of 9,173 units, or 37.6%, over retail sales for 1935, according to reports made by distributors to the Electrical League.

December sales totaled 1,850 units, an increase of 709 units, or 62.1%, over the 1,141 sold during December, 1935.

At the beginning of the year, the League set a quota of 30,000 units; 1936 sales exceeded that figure by 3,556 units, or 10.1%.

Frigidaire Claims 28% of 1936 Sales

DAYTON—"Having moved up from 23% of the total business in 1935 to 28% of the total business in 1936, the Frigidaire organization—factory and field—is now in the strongest position nationally of its history," Richard H. Grant, vice president of General Motors Corp. in charge of sales, told more than 750 field and Dayton executives at the annual dinner given them by E. G. Biechler, general manager of Frigidaire Division, Tuesday night, Jan. 12, at the Biltmore hotel here.

Mr. Grant, one of the early associates of Charles F. Kettering, and Col. Edward A. Deeds in the old Delco-Light company, which was the forerunner of Frigidaire, told how the original company had been set up on five fundamental precepts that presaged its growth to world-wide stature under the administration of Mr. Biechler and his associates in Dayton.

The address by Mr. Grant was the climax of a convention that started Monday morning and continued through Friday, when the visitors from every state, Canada, and several foreign countries returned to their home stations preparatory to introducing the 1937 Frigidaire products.

Following Mr. Grant's speech, a variety show headlined by the stage and radio comic, Milton Berle (and his mother) entertained the guests for more than an hour.

"For 30 years, I have been putting on commercial shows and conventions," Mr. Grant said, "and whereas generally I think my own are pretty

(Concluded on Page 2, Column 2)

Instalment Sales of Department Stores Increase 33% in 1936 over 1935

NEW YORK CITY—Strongly influenced by the increased interest of the public in home furnishings merchandise, instalment sales in the department store field registered a gain of 33% during 1936 over 1935, the Controllers' Congress of the National Retail Dry Goods Association reported from information gathered in its flash report on last year's retail business.

The 33% advance last year supplements an increase of 35% in 1935 over 1934, and these figures compare with a 12% increase in dollar sales in the field in 1936 over the previous year, and 7% gain in dollar sales in 1935 over 1934.

The Controllers' Congress reported that the Retail Credit Survey for 1935 of the Department of Commerce indicated 7.8% of department store sales in that year were made on deferred payment terms. An increase of 33% would mean that, in 1936, approximately 9.3% of the total volume of department stores was made on an instalment basis.

The growth of instalment selling both in 1935 and 1936, the Controllers' Congress pointed out, has been influenced considerably by the increased

Air-Conditioner Manufacturers to Tell United Story in 1937 Advertising

8 Manufacturers of Household Units in 1st 150 Advertisers

NEW YORK CITY—Eight manufacturers of household electric refrigerators were among the 150 leading magazine advertisers in 1936, according to figures compiled by National Advertising Records, Inc., from records of Publishers' Information Bureau, Inc.

The eight companies are The Crosley Radio Corp., The Edison General Electric Appliance Co., Electrolux Refrigerator Sales, Inc., Frigidaire Corp., General Electric Co., Kelvinator Sales Corp., Norge Corp., and Westinghouse Electric & Mfg. Co.

The combined expenditures of these firms for magazine advertising in the past year amounted to \$4,189,592, an increase of \$863,280 over the 1935 expenditures.

Frigidaire Corp. spent \$502,868 in

(Concluded on Page 20, Column 2)

Delco Back in Operation Following Plant Fire

DAYTON, Jan. 19—Production was resumed on a full-schedule basis this morning in the electric motor plant of the Delco Products division of General Motors Corp. here, after a temporary suspension of operations had been caused by a fire in the plant last night (Monday).

Less than 12 hours production time was lost due to the fire, and all shipments will be made on schedule, declares Carl Kindl, general manager of the Delco Products division. The plant involved is the one in which motors for electric refrigerators and washing machines are produced.

The fire was caused by a short circuit in electrical apparatus in a penthouse on the roof of the plant.

Servel Makes 1936 Profit Of \$4,240,355

EVANSVILLE, Ind.—Net profit of Servel, Inc., and its subsidiary amounted to \$4,240,355 during the year ended Oct. 31, 1936, compared to a profit of \$2,111,517 in the preceding year. Sales, less returns, etc., totaled \$24,881,103, compared with \$19,232,914 during the previous year.

interest in home furnishings, particularly in furniture and household appliances. It was noted that the furniture department was one of the departments most frequently indicated by stores reporting in the survey as having experienced a substantial sales increase in 1936.

"Major articles for furnishing the home have been customarily sold over a long period of years on extended payment terms," the Controllers' Congress reported. "An increase in the volume of such items, while contributing to the expansion of total sales volume, would effect to a far greater degree the instalment sales volume. This must be taken into consideration in connection with the figures in cash, charge, and instalment sales increases."

Compared to the 11.8% increase in dollar volume, the actual number of units sold in 1936 increased 4.9% over 1935, the report revealed. This increase must be considered, it was said, in light of increases in unit transactions in the three major types of sales: 3.7% in cash, C.O.D. and will-call sales; 5.4% in charge sales; and, greatest of all, 22.3% in deferred payment sales.

WASHINGTON, D. C.—Suggested copy themes covering all advertising during 1937, designed to guide manufacturers and suppliers of air-conditioning equipment in telling a united, authoritative story of their products and services, has been agreed on by members of Air Conditioning Manufacturers' Association, it was announced last week.

The program, designed for use by suppliers of materials to the industry, as well as by ACMA member companies, was prepared by a special committee of the organization.

"Manufacturers have a natural and understandable habit of producing competitive programs of advertising that actually serve to slow up purchases by disturbing and confusing prospects through claims and counter-claims," says a statement made in connection with the preparation of the program.

"The Air Conditioning Manufacturers' Association's recommended program, on the contrary, adheres to the basic advantages of air conditioning, features special selling opportunities at the appropriate seasons, and in general will guide manufacturers and suppliers in telling a united, authoritative story about an industry that is so comparatively new in its human comfort applications that its benefits are little understood by the general public.

"Nothing in this ACMA 'platform' will deter an individual manufacturer from going into full details about his own methods and equipment. But in any selling, a principle has to be sold before a product can be sold, and that is what this agreement on themes is designed to accomplish."

The schedule of advertising themes formulated for the industry and its suppliers was drawn by the ACMA advertising committee.

The "minimum definition" for

(Concluded on Page 20, Column 3)

New Dayton Line Is Announced

BUFFALO—A newly designed line of Dayton electric refrigerators, incorporating several new convenience features, has been announced by Heinz & Munschauer for 1937.

Four models of 4, 6, 7, and 9-cu. ft. capacity are in the household series, with two larger models of 15 and 20-cu. ft. size, designed especially for use in small restaurants, beer gardens, delicatessens, and grocery stores.

Cabinets in this year's Dayton line are styled by Federico, and have curved crown tops in front, for streamline design, with flat top back of this for convenient storage space.

Shelf arrangement in the Deluxe line is designed to provide maximum storage space. Top left shelf is spaced for storage of quart milk bottles, and top right shelf for tall bottle storage. In the center of the top shelf is an extra space between the glass tray and the bottom of the

(Concluded on Page 20, Column 1)

Klinger to Head Trenton Refrigerator Sales

TRENTON, N. J.—Appointment of Harry Klinger as national sales manager for the refrigeration division of Trenton Auto Radiator Works, maker of Kramer refrigerating equipment, has been announced by Israel Kramer, company vice president. Frank B. Hutchins has been appointed assistant sales manager.

Mr. Klinger was formerly vice president of Fretz Brass & Copper Co., Philadelphia. While there he organized and developed a refrigeration supplies division, which was later absorbed by Melchior, Armstrong, Dessau Co., as its Philadelphia branch.

Following this Mr. Klinger became

(Concluded on Page 2, Column 5)

Two Low-Temp Models Feature '37 Norge Line

Ranges & Home Laundry Equipment Also Shown At Regional Meetings

DETROIT—New lines of household electric refrigerators, electric and gas ranges, and home laundry equipment are being shown for the first time this month by Norge division of Borg-Warner Corp. in a series of regional distributor meetings, conducted by factory executives and department sales managers throughout the country.

Fifteen models are in the household refrigerator line, featured this year by the Norge Low-Temp, a new type of refrigerator said to combine low temperature and high humidity.

Two models comprise the Low-Temp line, one large double-door model of 12 cu. ft. capacity, the other of 8 cu. ft. size.

The Low-Temp, according to Norge engineers, maintains temperatures of less than 40° F. in the food compartment, instead of the usual 50° F., with higher food compartment humidity, permitting the storage of perishable foods in their original state of "prime freshness" for periods from two to five times longer than in other electric refrigerators.

Increased insulation, larger freezer area, and a system of two evaporators, one inside of and completely insulated from the other, are construction features of the Low-Temp line, Norge engineers assert.

Added insulation is designed to maintain lower established cabinet temperatures, increased evaporator area, to raise the average temperature of the evaporator surface and obtain higher relative humidity, since it was found that humidity was controlled by the difference between temperatures of evaporator and cabinet.

To offset the slower freezing which higher evaporator temperatures ordinarily mean, the system of two evaporators was worked out—one inside the other and insulated from it. The outer, or higher temperature unit, cools the cabinet, the inner unit provides fast freezing. Inside evaporator is sealed to prevent extremely cold air from entering the cabinet interior.

The Low-Temp is powered by a Rollator compressor much the same as that used in conventional Norge units, which supplies each of the two evaporators with the refrigerant necessary for proper operation at its particular temperature.

Three models of the Low-Temp were introduced by the company last August, following tests conducted by cooperating housewives in various sections of the country, and laboratory tests made by independent agencies in New York City and Detroit. (See REFRIGERATION NEWS, Aug. 12, 1936.)

The new Norge gasoline-electric Rollator refrigerator is designed primarily for rural homes, and is powered with a gasoline motor-generator that can be located as far away as 300 feet. Enough electricity is generated to operate, in addition to the refrigerator, a washer, other appliances, and electric lights. Should high-line current become available,

(Concluded on Page 6, Column 1)

Electric Equipment Co. New Kelvinator Outlet

DAVENPORT, Iowa — Electric Equipment Co. has been appointed Kelvinator distributor in this territory, replacing Mueller Lumber Co., of this city, which recently relinquished the Kelvinator franchise.

Joe S. Kimmel is president of the new distributorship; Fred Swartz is secretary; and Don Stuber is sales manager.

Retail Association Trade Agreements Hit by FTC Order

(Concluded from Page 1, Column 1) made by manufacturers and dealers to homes, and that manufacturers and dealers shall not sell merchandise to retailers who hold themselves out as contract furnishers operating on a basis similar to that of a wholesaler."

In great detail the FTC forbids the association from "requiring the maintenance of these policies by persuasion, competitive pressures, compulsion, or any other method."

The FTC's "cease and desist" order also states that "lists or bulletins may not be published by the association setting forth names of retail dealers who do or do not abide by the policies and practices barred under the order, or listing names and products of manufacturers or distributors who do or do not follow these policies."

The complaint to the FTC is said to have originated with the Slack Furniture Co., East St. Louis. This company's advertising over KMOX, St. Louis radio station, featuring installment sales "with no interest charge" antagonized neighboring retailers. These retailers are said to have endeavored to induce the radio station to decline the advertising or censor the copy, KMOX refused.

Consequently, it is alleged, the retailers attempted to induce jobbers to refuse to sell Slack. News of this effort reached the Slack Co., and it immediately appealed to the FTC.

The commission's order apparently terminates the case, since the St. Louis association did not fight the charges.

Gail B. Ussery, secretary of the Retail Furniture Dealers' Association of St. Louis, stated that the FTC's order related solely to conditions which existed under the NRA. No change in practice will be required, he declared, since the NRA has been held unconstitutional.

"The actions referred to," Mr. Ussery said, "were those of asking wholesalers to comply with their national code, which prohibited wholesale selling to consumers at wholesale prices. In this, the retailers simply followed the request of General Hugh S. Johnson and President Roosevelt that citizens deal only with concerns complying with their codes."

"There never was any agreement among retailers that any particular rate of carrying charges should be made on installment sales, and the commission, in its report, did not find that such ever took place."

"Retailers will continue to require carrying charges, as they have always done."

Officers of the St. Louis association named as respondents in the FTC's order are: Peter M. Igoe, former president; Joseph Manne, president; Joseph B. Hellrung, vice president and treasurer; Shirley D. Gregson, vice president; Fred C. Dau, treasurer; Gail B. Ussery, secretary.

Several board members were mentioned in the commission's order.

Crosley Distributors Meet Executives in Annual Conclave



Top Row: (1) H. M. Ward, Marshall Wells Co., Portland, Ore.; (2) P. W. Bialkowski, Pacific coast district manager; (3) C. D. Russell, Associated Wholesale Electric Co., Los Angeles; (4) H. A. Armbricht, district manager; (5) O. L. Griggs, Marshall Wells Co., Billings, Mont.; (6) Mr. Bialkowski;

(7) J. P. Rogers, vice president; (8) Thomas W. Berger, general sales manager; (9) R. E. Field, director, all of Crosley.

Bottom Row: (10) H. J. Gebter, (11) C. E. Heller, (12) M. J. McCuen, and (13) C. M. John, all of Greusel Distributing Co., Milwaukee; (14) R.

H. Money, Crosley chief engineer; (15) Howard Tizor, chief radio engineer; (16) Lewis Crosley, vice president and general manager; (17) William White, manager of the washer-ironer department; (18) Powel Crosley, III, vice president.

Frigidaire Field Men Preview 1937 Plans; Biechler Dinner Convention Highlight

(Concluded from Page 1, Column 2) good, and the other fellows' are second-rate, this time I must say the dress rehearsal of your 1937 dealer show tops any I've ever seen.

"Delco-Light was founded on five fundamental principles," he continued, "which have been carried on by its successor organization, Frigidaire."

"These five precepts included the requirements that products be good, that sufficient money be spent for engineering to keep the flaws out, that inspection and manufacturing standards be of the highest order, that the company and the products keep up with the trend, that there be a good dealer organization to insure broad distribution, and that the accounting system be of such efficiency that the management could know at any time just where the business stood."

"The knowledge of these fundamentals preordained the success of this business. Not long after Frigidaire was purchased by General Motors, it dwarfed the Delco-Light company."

The annual Biechler dinner followed the preview of the 1937 sales convention at the Victory theater where one of the crack crews which will go into the field this week to dramatize the new products and the sales promotion plans that will aid in their marketing were "dress re-

hearsed" in front of the critical eyes of the field men.

The convention preview was under the chairmanship of Frank R. Pierce, household division manager, who was assisted by Roy E. Smithson, commercial division manager, and Charles T. Lawson, household sales manager. Ellsworth Gilbert was convention director.

As Mr. Pierce expressed it, the 1937 Frigidaire sales story can be compressed into the following message:

"The Super-Duty Frigidaire with the Meter Miser provides all five basic services."

"Greater protect-ability, ice-ability, storage-ability, dependability, and save-ability."

Frigidaire salesmen will be taught to group Frigidaire features under these five headers for ready reference, for easier memorization, and for aids in answering objections and meeting competitive arguments.

A second Frigidaire convention going on simultaneously with that of the sales department is one that has brought 150 service sales managers to Dayton from all parts of the nation. These men, in charge of installation and service work throughout the nation, are meeting under the chairmanship of V. A. Hetzel, installation and service division manager. Wednesday the guests were taken

on tours of the plants at Moraine City and Taylor St. by Works Manager E. R. Godfrey to witness the manufacture of the products. Thursday and Friday were devoted to straight business sessions and conferences.

Speakers at the business sessions included:

"State of the Industry"—C. A. Copp, general sales manager; "Household Keynote"—F. R. Pierce, manager, household division; "Engineering Progress"—E. B. Newill, chief engineer; "Testing Standards"—H. M. Williams, manager, standards division; "1937 Advertising and Sales Promotion Plans"—L. A. Clark, advertising and sales promotion manager.

"Outline of 1937 Training Program and Materials"—L. A. Clark; "Training Program"—F. R. Pierce; "1937 Organization Program"—W. F. Switzer, manager, organization division; "Public Utilities"—H. J. Walker, Jr., manager, utilities division.

"Department and Furniture Stores"—D. A. Packard, manager, department store division; "Developing Better Dealers"—C. T. Lawson, sales manager, household division; "Service in 1937"—V. Hetzel, manager, service division; "Frigidaire Wholesale"—L. McCutcheon, manager, wholesale division; "Frigidaire Commercial"—R. E. Smithson, manager, commercial division; "Commercial Engineering Projects"—E. B. Newill; "Commercial Advertising and Promotion Plans"—T. W. Markham, commercial advertising manager; "Closing Remarks"—C. A. Copp.

Among the major out-of-town guests in Dayton for the meeting were E. R. Breech, chairman of the board of North American Aviation, Inc., and a member of the personal staff of Alfred P. Sloan, Jr., president of General Motors; and Dr. J. O. Downey, a member of the G-M executive staff, both from New York City.

Thursday the district representatives held a business session at the Engineers' club, followed by a "turkey-bean" dinner given by Frank R. Pierce, household division manager, in honor of the men who turned in the largest quotas of business during the year just closed.

The influx of Frigidaire men was so great that virtually all the facilities of the Van Cleve, Biltmore, Miami, and Gibbons hotels were strained for their housing.

Delegations to the convention arrived from Los Angeles, San Francisco, Oakland, Calif., Portland, Ore., Seattle, Spokane, Salt Lake City, Billings, Mont., El Paso, Fort Worth, Dallas, San Antonio, Houston, Denver, Wichita, Omaha, Oklahoma City, Memphis, New Orleans, Atlanta, St. Louis, Louisville, Minneapolis, St. Paul, Chicago, Detroit, Indianapolis, Cincinnati, Tampa, Miami, Roanoke, Norfolk, Pittsburgh, Buffalo, Rochester, N. Y., Syracuse, Albany, Baltimore, Washington, D. C., Newark, New York City, Akron, Chattanooga, Boston, Hagerstown, Md., Newcastle, Pa., Cleveland, and Toronto, Ont.

Sales Gain 25% in San Diego in '36, Bureau Reports

SAN DIEGO, Calif.—Sales of electric refrigerators in San Diego county during 1936 show a gain of approximately 25% over the preceding year, according to statistics compiled by Clark Chamberlain, manager of the Bureau of Radio and Electrical Appliances of San Diego County.

The year's most notable increase was made in electric ranges, the statistics show, where sales increased approximately 85% over 1935 figures. The entire electrical appliance field will show an average increase of about 20% over 1935, Mr. Chamberlain estimates.

Total San Diego county refrigeration sales during 1935 and 1936 are equal to about 25% of the wired homes in this territory, Mr. Chamberlain states. Despite this comparative saturation, however, he expects sales in 1937 to equal 15% of the territory's wired homes, or approximately 9,000 units. Activity in electric ranges will be another high point this year, he believes, while ironers should command greater attention than in the past.

The bureau's annual spring refrigeration show, held off last year because of the San Diego Exposition, will be resumed this year, and will be staged some time in April.

Stern Heads Trenton Automotive Sales

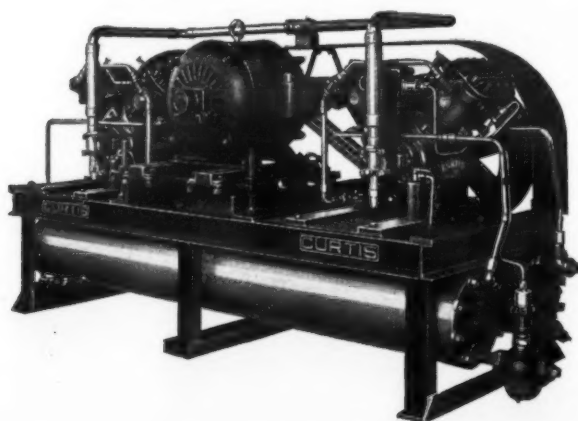
(Concluded from Page 1, Column 4) Philadelphia sales manager of Melchior, Armstrong, Dessau Co., and remained with the company until April, 1936. During this time he was largely responsible for the organization of the Electric Refrigeration Association of Philadelphia.

Benjamin Stern, formerly general manager of Kramer's Pittsburgh branch, has been brought to Trenton as sales manager in charge of automotive products. Clifford W. Thorn succeeds Mr. Stern.

Separation of refrigeration and automotive sales management has been necessitated by the fact that the company's coil sales have more than doubled in the last six months, Mr. Kramer said. An increase of approximately 30% in factory floor space also has been effected.

What 83 YEARS OF EXPERIENCE Means

IT MEANS first of all that the Curtis organization has accumulated the benefits of successful manufacturing and engineering



experience since 1854. It means that today Curtis designs and construction details reflect that fine engineering technique that only experience can produce. And the result is the care-free, efficient performance of each Curtis condensing unit.

It means too that the Curtis merchandising policy is time proved. Curtis does not sell direct nor through any outlet other than its recognized representatives. With such a product and policy Curtis dealers everywhere are making money. Write today for further information.

Represented in Canada by
CANADIAN CURTIS REFRIGERATION CO., Ltd.
20 George St., Hamilton, Ont.

CURTIS

CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 KIENLEN AVE. ST. LOUIS, U. S. A.

McCord

Refrigeration and Air Conditioning

PRODUCTS

- CONDENSERS
- COMMERCIAL EVAPORATORS
- DOMESTIC EVAPORATORS
- COMFORT COOLERS
- MARKET COOLERS
- AIR CONDITIONING SURFACE
- UNIT HEATERS
- BLAST HEATING SURFACE
- CATALOGS ON REQUEST

McCord Radiator & Mfg. Co.
DETROIT, MICH.

Watch for
Announcement

NEW 1937

Triple-Thrift

REFRIGERATORS



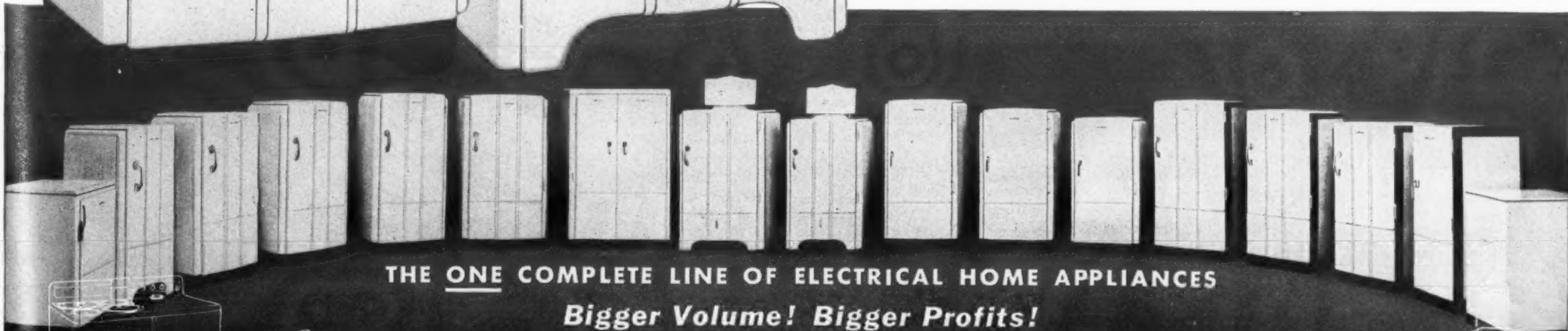
1937 will be a G-E year!

THE PRODUCT... Here's the refrigerator sensation of 1937! New modernly styled cabinets... new stainless steel Super-Freezer... new full-width sliding shelves... new Thrift-ometer... new advanced features of economy and convenience. A complete line—not a gap in it. Eighteen models—all powered with the trouble-free, vacuum-sealed General Electric Thrift Unit that uses less current and will last longer.

THE PRICE... The new General Electric Triple-Thrift Refrigerators are *priced lower!* A new schedule of prices and discounts that meets competition... in every market... at a profit!

THE PROMOTION... Supported by the most extensive advertising program ever released by G-E, including national magazines and billboards, newspapers and radio, dealer identification and window displays, movies and sales literature.

Wire or write for details today. General Electric Co., Appliance and Merchandise Dept., Section DF1, Nela Park, Cleveland, O.



THE ONE COMPLETE LINE OF ELECTRICAL HOME APPLIANCES
Bigger Volume! Bigger Profits!

GENERAL ELECTRIC

ALSO A COMPLETE LINE OF WATER COOLERS, BEVERAGE COOLERS, MILK COOLERS AND COMMERCIAL REFRIGERATION EQUIPMENT FOR EVERY PURPOSE

MacDonald Heads Leonard New England Merchandising

DETROIT—Appointment of N. C. MacDonald as New England representative of the merchandising division of Leonard Refrigerator Co. has been announced by E. R. Berkeley, merchandise manager.

Ford-Aire Establishes Outlet in Michigan

DETROIT—Sales headquarters for the Ford-Aire Sales Co. of Michigan have been established at 5840 Second Blvd. The distributing company holds an exclusive contract covering Michigan with the exception of Oakland County and part of Macomb County. Ford-Aire products are the result of the work of James A. Ford, director of the organization, who in 1924 founded the Ford Boiler Co. to develop oil and gas as efficient fuels. A complete line of heating and air-conditioning units is now handled by the company.

Officials of the firm are Guy G. Wedt-

hoff, president; William M. Joy, vice president; W. A. R. Sutherland, secretary and treasurer; Henry Knowlton, Jr., general manager.

General Refrigeration Sales To Hold Service School

BELOIT, Wis.—General Refrigeration Sales Co., manufacturer of Lipman equipment, is conducting a series of schools for distributor and dealer service men at the factory here. Three sessions are scheduled, beginning Jan. 25, Feb. 1, and Feb. 8.

Special Credit Plan Builds Sales for Millen Hardware

MILLEN, Ga.—Millen Hardware Co., local appliance dealer, sold 71 refrigerators between Oct. 15 and Dec. 24, 1936, as a result of a special Christmas credit plan.

This plan stipulated that the purchaser pay one-fifth of the purchase price when buying the refrigerator, with no further payment until March 1, 1937.

HOW TO SELECT AND INSTALL AIR-CONDITIONING SYSTEMS

By T. H. Mabley, Chief Engineer
Mechanical Heat & Cold, Inc., Detroit

Case No. 3

Residence System With Room Cabinets

Our first two "cases" involved installation of room-type unit conditioners in offices; we will now consider the installation of similar units in a typical home.

Here we have an average size home with a basement, two full floors, and an unfinished attic. The house is at present heated with a hot water system and our prospective purchaser of air-conditioning equipment is interested in the most satisfactory type of installation available that will offer all the advantages of a complete air-conditioning job, and that can be installed economically in his present residence.

A survey of the building shows that it is well insulated and awnings are used on all of the windows which are exposed to strong sun rays. The present hot water system which was recently modernized by the installation of a circulating pump, heats the home very satisfactorily.

From these facts let us see what recommendations could be made. First, the problem of winter temperature seems to be fairly well handled.

However, in studying the physical details of the first floor rooms, we conclude that the space limitations indicate it will be advisable to replace the present cast iron radiators with air-conditioning units in the living room and dining room.

In the second floor bedrooms, the element of space is not so important, and since we are trying to keep the original equipment cost as low as possible, a unit without heating coils may be used for the bed rooms.

From the standpoint of summer temperature control, we are primarily interested in the rooms normally occupied by the family. These are the living room, dining room, and two bedrooms. Probably all these rooms will not be used simultaneously, so in selecting equipment we shall consider the maximum cooling load as the total of the two first floor conditioned rooms, or the total load of the two bedrooms, according to which combination requires the greater load.

For winter humidification the ideal arrangement would be to have some means of humidification incorporated into each unit, but again we must consider the cost. If means for humidification were installed in the living room, the benefits would be felt to a considerable extent throughout the house. Also, the living room is the most used room in the average home. Most people prefer to sleep with

their windows open which eliminates the idea of humidifying the bedrooms at night, and it would be impractical to consider humidification of these rooms for the short periods they are used during the daytime.

The matter of air circulating is important from the standpoint of both heating efficiency and fresh air supply. Circulation tends to break down the tendency for stratification of air with the coldest air on the floor and the warm air rising to the ceiling. This feature is particularly helpful in the living room.

In the bed rooms we are not so concerned with perfect temperature distribution, but are chiefly interested in regulating the volume of fresh air during the summer evenings. Usually at this time we must limit the fresh air infiltration to a quantity that will not put too much of a load on the cooling system. For this reason we will select a unit for the bedrooms that is equipped with a fresh air connection.

Our second step in the system layout is to select limits for design. As to winter temperatures we are

to reduce the volume of air handled by each unit during the heating season so as to avoid the danger of too great an air circulation or too low an outlet air temperature from the units. Either of these might be sources of discomfort.

The air might be regulated by means of a two-speed motor on the fan, or a volume damper in the discharge. An alternate, but not the best arrangement, might be to balance this unit with the rest of the hot water radiators by throttling the water flow to these units by means of some sort of regulating valve. The dining room unit may be selected in the same manner but the humidifier is eliminated.

The bed-room units are standard cabinet type room coolers with fresh air connections. These connections should be equipped with regulation dampers.

Each of the air conditioners should be provided with a manual switch which controls both the fan in the unit and the solenoid valve located in the refrigerant line to the cooling coil.

Location of Equipment and Room Controls

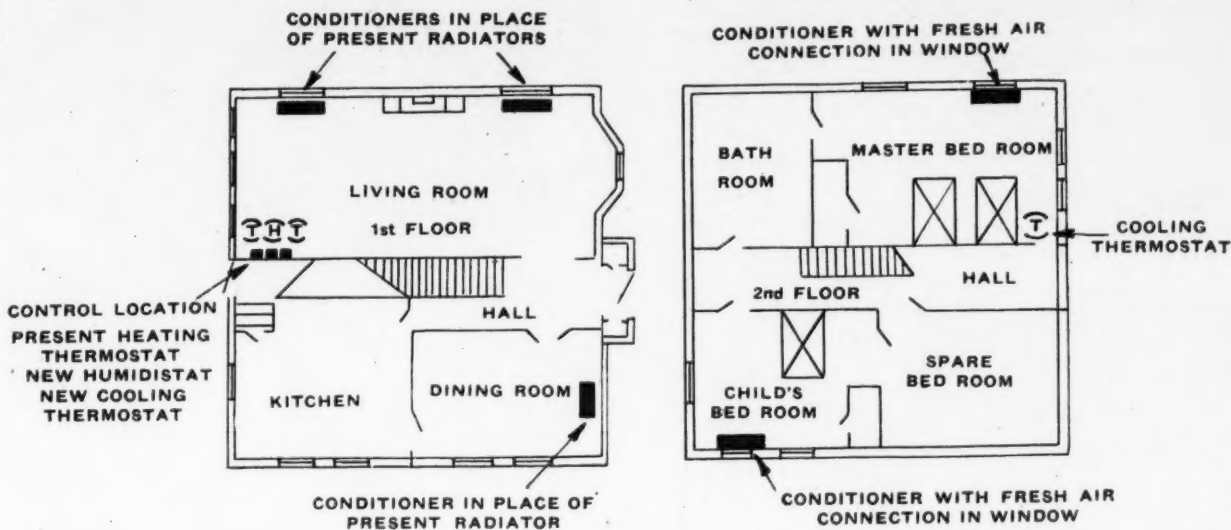


Table 1—Cooling Load Estimates

| | |
|------------------------------------|---|
| Living Room | 16,600 B.t.u. based on 15° temperature differential |
| Dining Room | 9,200 B.t.u. based on 15° temperature differential |
| Total for 1st Floor..... | 25,800 B.t.u. |
| Master Bed-room | 11,700 B.t.u. based on 10° temperature differential |
| Child's Bed-room | 8,600 B.t.u. based on 10° temperature differential |
| Total for Second Floor..... | 20,300 B.t.u. |

not seriously concerned since the owner has given assurance that the heating plant performs adequately.

For summer conditions we select a dry-bulb temperature of 78° F. and a relative humidity of 50% when the outside air is at 93 degrees dry bulb and 75 degrees wet bulb. It is usually preferable to maintain a residence at the lower range of the summer inside temperature scale because the occupants are ordinarily in the space for a long period of time. Some correction on outside design figures can be made for the normally reduced temperature at night in calculating the bed room load.

The total cooling loads for the various conditions are differential as shown in Table 1.

The 10-degree temperature difference for the second floor is an arbitrary figure because there are many variable factors. One such factor is the ceiling heat gain which includes the item of heat stored up in the attic during the daytime. This might make the maximum temperature difference for the ceiling as high as 40 degrees.

If the refrigerating equipment is based on the first floor total load we have a factor of safety to permit the compressor, when operating with the bedroom units, to pull the temperature in these rooms down to a comfortable level in a short period of time.

We are now able to select our equipment. For the living room we will replace the radiators under each window. The cooling output of the two units should total at least 16,600 B.t.u.

Units may be of the standard cabinet design and do not necessarily have to have a fresh air duct connection as the normal infiltration should provide ample fresh air. These units should have a humidifier of sufficient capacity to maintain approximately 20% relative humidity with 0° F. temperature outside and normal infiltration in the entire heated volume of the home.

The heating coil in each unit should have the equivalent capacity of the radiators which it replaces. In checking the capacity it should be remembered that it may be advisable

a regular clock thermostat may be reconnected to operate an additional relay for this changeover function.

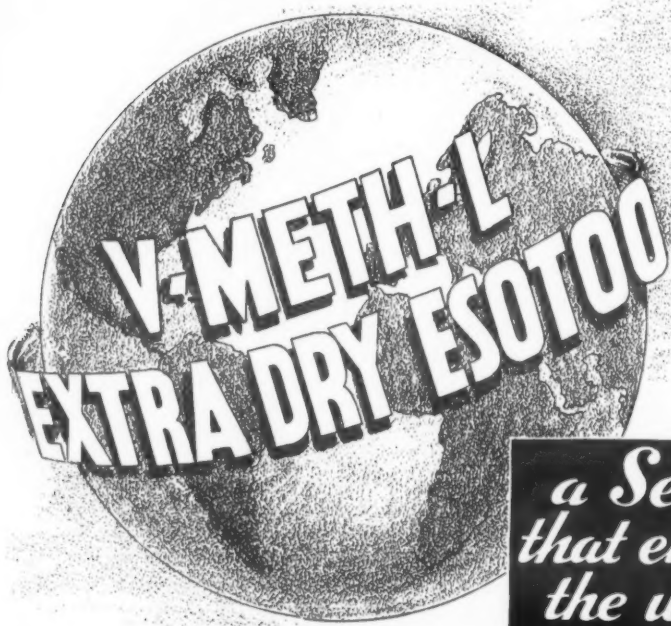
Each of the two thermostats shall operate its own double pole relay. One pair of contacts on this relay controls the refrigeration machine and the other circuit operates a solenoid valve located in the liquid refrigerant line to the conditioners, located on the floor controlled by that particular thermostat relay.

The heating control may be accomplished by means of a thermostatic switch installed on the hot water inlet to the conditioners used for heating purposes. This switch will control the fans in such manner that the air will be circulated through the unit only when heat is supplied from the hot water heating system. The thermostat which controls this system is located in the living room and so need not be changed.

With this arrangement the air conditioners will perform almost the same heating function as the radiators which they replaced. The fact that the thermostat for the automatic heating system is now located in the living room helps to offset the lack of "holdover" and radiation effect which was inherent with the old cast iron radiators.

The installation of this system involves connection of the compressor with different conditioners. The compressor may be installed in the basement and should preferably be incased in some form of sound-proof enclosure.

The main liquid line from the machine should be split into first and second floor distribution headers with each of these two zones to be controlled by the solenoid valves described previously. The refrigerant lines in this case can be run up between the wall studding, and the drains brought back in the same manner.



a Service that encircles the world

Every day that goes past the world-wide demand for our refrigerants grows. In Europe . . . in Africa . . . in Australasia . . . our products are known and sold. We have the organization and shipping facilities for servicing these increasing foreign orders . . . promptly and efficiently.

But we'd like to enlarge the number and the geographical distribution of our foreign representatives. We would welcome correspondence concerning the representation of V-METH-L (Virginia methyl chloride), Extra Dry ESOTOO (liquid sulphur dioxide), and other Virginia Smelting Company products in foreign countries.

Please write to Virginia Smelting Company, West Norfolk, Virginia, U. S. A.

VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

Some people think the all-porcelain enameled refrigerator is "high-priced." That erroneous impression is caused chiefly by the fact that frequently the all-porcelain enameled refrigerator is the deluxe model—equipped with expensive gadgets.

Putting porcelain enamel on the exterior, too, costs only a very few dollars more. So few, in fact, that the trend today is toward all-porcelain.

The public always wants lasting quality. Be sure you give it to them.

PORCELAIN ENAMEL INSTITUTE, INC.
612 NORTH MICHIGAN AVENUE, CHICAGO

Blair Tops A.G.E. Campaign

ERIE, Pa.—James S. Blair, salesman for Arthur Shultz Co., here, sold 137 General Electric refrigerators in seven weeks, during the recent Refrigeration Jubilee conducted by Associated Gas & Electric System. Averaging three units a day, Mr. Blair chalked up sales of \$25,509.

Gibson Shown in Newark

NEWARK—Northern New Jersey dealers got their first look at the 1937 line of Gibson refrigerators Jan. 12 and 13, when Eastern Electrical Supply Co., Gibson distributor in this territory, held a dealer showing at its local headquarters, according to Ben Golden, Eastern's sales manager.

Questions on Robinson-Patman Act Answered by Co-Author

CHICAGO—Questions regarding 15 important phases of the Robinson-Patman Act, covering discounts, published prices, allowances, and discounts, were answered last week by Congressman Wright Patman in response to the request of National Retail Furniture Association.

The answers cover topics not fully treated in Mr. Patman's address at the N.R.F.A. banquet here. In making his reply, the legislator said he wished it understood that he had neither the right nor the power to interpret the law, and that the answers represented only the intentions of the authors of the act.

Full text of the N.R.F.A. questions, and of Mr. Patman's answers, follows:

Question No. 1: May a manufacturer give a jobber a discount larger than is justified by the savings in the cost of production—because of the different method of distribution and different service performed by the jobber?

Answer: No; the only differential that may be granted, must be based upon differences in cost of manufacture, sale, or delivery. It will be noticed that the exception in the law which permits a differential to be granted says "resulting from the differing methods or quantities in which such commodities are to such persons sold or delivered." It will be noticed that the method of distribution of the jobber is not to be used for the purpose of granting a price differential. Only that price differential which makes the allowance or difference in the cost of manufacture, sale, or delivery, is allowed, and notice that the differing methods or quantities in which such commodities "are to such persons sold or delivered"—not the methods used by the jobber; but the method of delivery to the jobber.

2. What are functional discounts on the part of manufacturers—as between jobbers and retailers, assuming same quantity and conditions of shipment and payments?

Answer: Functional discounts may be allowed, since they are not in competition. However, if a manufacturer is selling to a jobber and selling to retailers in the same area, he should be very careful that his sale to the jobbers does not result in a discrimination against his retail customers in that area. In other words, if the price to the jobber is so low that the jobber sells to his customers at a lower price than the retail customers of the manufacturer can buy for, it is probable that this would be held to be a discrimination. This question should be viewed particularly

with reference to that part of the law which says that a discrimination should not be granted or received which discriminates against the "customers or either of them."

3. May a manufacturer sell to wholesalers and retailers at different price for the same grade, quality, and quantity, on the theory they are not in competition with each other?

Answer: Yes, provided, of course, that a discrimination is not granted to the customers or either of them.

4. A manufacturer has two published prices—a price to the retailer and a price to the wholesaler. In territories where this manufacturer has no wholesale trade, he gives the retailer the wholesaler's price or a price between the wholesale price and the retail price. Is such a price a violation of the Robinson-Patman Act?

Answer: No.

5. What of a jobber who sells both retailers and consumers—in relation to his purchasing classification in case functional discounts are allowed by the manufacturers?

Answer: I believe the burden is upon the manufacturer to show the part of the goods upon which a functional discount should be allowed, and the part no discount is allowed upon. In other words, the cautious manufacturer will probably bill the goods to the jobber at the regular price. When the jobber submits proof that he has sold a part of the goods as a jobber to retailers, he will be granted functional discounts for that part of the goods only.

6. Is there any provision in the Robinson-Patman Act regulating a jobber or a wholesaler who also accepts retail business, in his representation to his retail consumer customers that they are buying on the wholesale or jobbers basis?

Answer: No, but I believe the present Federal Trade Commission Act is sufficient to prevent such an unfair trade practice.

7. Suppose a large retail organization, such as a mail order house, sets up its own factory and selling organization. Does the Robinson-Patman Act have any control?

Answer: No, the law does not apply. However, such an organization will be subject to this law when it purchases raw materials. It will have to pay the same price for the same quantity as other persons. Such an organization will also have to deal with labor, and be subject to the other problems connected with the manufacturing business. In that event, the selling organization will not obtain a free ride upon the back of the independents, as it has in the past, and will not be able to buy its goods at such a low price that independent merchants must make up for the loss by the payment of a higher price.

8. Can a retailer take any action when a manufacturer cuts off a discount, or otherwise makes a move which in reality means a price increase—by claiming wrongly that "under the Robinson-Patman Act he no longer provides such a discount?"

Answer: No, the retailer cannot take any action, since the manufacturer has a right to select his customers. However, if it can be shown that the discount is not taken away from the competitors of this retailer, he would have a cause of action.

9. Is it unlawful, under the Robinson-Patman Act, for a manufacturer to accept an order for merchandise from one or more of his large customers, whether a buying group or an individually operated concern, at less than total cost of production, to be manufactured in the "off" season, which products will be sold in competition with other products of the same or other manufacturers which may be made either in the "off" season or in the "in" season?

Answer: No, if the same proposition is available to all the other customers of the manufacturer. This law does not prevent orders for future delivery, and when the orders can be placed to be filled when the raw materials are cheaper, or when labor

is cheaper, or when there is no overtime labor to be paid, there is no reason why one placing such an order cannot receive the benefit of these advantages.

10. A manufacturer or a jobber, through his own representatives, solicits contract orders for furnishing hotels or public institutions and bids on such jobs in competition with retailers—at lower prices than the retailer can possibly afford to quote unless he, the retailer, wishes to sell the merchandise at 2 or 3% above his cost from the manufacturer. Is such competition illegal under the act? Is it unlawful for a manufacturer or jobber, in soliciting the above business, to quote the prospective purchaser a price on such a contract-furnishing job, then go to a retailer and offer to pay him 2 or 3% if the retailer will allow the deal to be billed and cleared through him?

Answer: (a): Presuming that the furnishing hotels and public institutions are not purchasing the goods for resale but for their own consumption, it is not in violation of the law unless a state of facts should exist that will show such a price to be a discrimination against the customer, for instance, the retailer as customers of the manufacturer. (b): Presuming that the deal does not otherwise violate the law, there is nothing in the law to prevent the manufacturer from asking a deal with the retailer to bill the goods through him and pay him a commission for this service.

11. In view of the recent Federal Trade Commission complaints, will you explain the basic merchandising issues involved, such as discriminatory advertising allowances, payment of demonstrators by manufacturers,

payments of "push money" to salesmen of retailers, discriminatory discounts for quantities—to mail order and chain institutions, etc.

Answer: A discriminatory advertising allowance is one that is not granted upon proportionally equal terms to all customers who are in competition. Demonstrators may be furnished so long as they are furnished on proportionally equal terms to customers competing. That is, for an order for a certain amount, if a demonstrator is allowed for 30 days; to one purchasing half that amount a demonstrator should be allowed for 15 days. Demonstrators that are salesmen in stores are prohibited under this law, unless the same service on proportionally equal terms is granted to all other customers competing. That is one way to grant a lower price which is prohibited by this law.

Payment of "push money" to salesmen of retailers is prohibited, unless granted to all customers on proportionally equal terms. You will notice that the law does not confine such payment to the customer, but includes payments for the benefit of a customer.

Discriminatory discounts for quantities to mail order and chain institutions means that the difference in price must be justified by differences in the cost, manufacture, sale, and delivery. The law says that the seller who charges 1 million dollars for 1 million units should charge \$12 for 12 units, but if in the manufacture, sale, or delivery of the larger quantity it can show that there is a saving of 5 cents on each unit, the seller may give the purchaser of the larger quantity the benefit of that 5 cents. He is not compelled to give

him the benefit of any of it, but he is prohibited from giving him more than the 5 cents savings per unit.

12. Will the "rule of reason" be applied in connection with enforcement of the act—and have you any suggestions on how it will be applied?

Answer: That is a question I cannot answer. My opinion is that the Federal Trade Commission and the courts will not deal in petty, trivial cases, and that every effort will be made to deal with all fairly and alike.

13. Are retailers, operating in intra-State business only, liable under the act for any "loss leader" selling they do?

Answer: No.

14. What is the plan of the sponsors of the proposed State "Robinson-Patman bills" to get such laws passed through the various legislatures at the coming session?

Answer: Such a model bill is now being sent out, and will in a short time be introduced in the various legislatures.

15. The act states that it shall be unlawful to discriminate in price between purchasers, etc. What does the Federal Trade Commission consider the word "price" to mean? Does "price" mean the price applicable to one shipment, or to an order, or to purchases over a given period of time?

Answer: You will notice that the law says that it is unlawful either directly or indirectly to discriminate in price. Therefore, the terms of sale could be an indirect discrimination in price. As to whether it is applicable to one shipment, or to a number of shipments over a given period of time, depends upon the facts in each case.



—and this is how he did it

This man has just sold a Copeland.*

One simple truth made the sale—a truth learned when thousands of women recently were asked this question:

"What really counted most when you bought your electric refrigerator?"

The answers revealed the startling fact that so-called sales features are of secondary importance; that the excellence of the refrigerating mechanism is overwhelmingly of first importance.

That's why the Copeland story—and it is a story that can truthfully be told

about no other refrigerator—sells Copelands, just as it sold this one. For the Copeland twin-cylinder unit is the finest of all refrigeration mechanisms, and we can, and do give you the facts to prove it.

A big-scale national and local advertising program, a complete ultra-modern line of models, exceptionally attractive discounts—plus the kind of a floor and retail finance plan that you have been waiting for—make Copeland worth immediate investigation. Write, phone or wire J. D. McLeod, General Sales Manager today.

*This is not fiction; it happened thousands of times in 1936; it will happen many more thousands of times in 1937.

COPELAND

REFRIGERATION CORPORATION

A DALLAS E. WINSLOW INDUSTRY

DETROIT, MICH.

PIONEER MANUFACTURERS OF REFRIGERATION

NEW ZENITH REFRIGERANT FILTER

Two years of successful operation in the better known commercial refrigerator units has proved the value and efficiency of Zenith Filters.

These units are now available to the Jobbing Trade. No other filter compares with a Zenith.

CHECK THESE FEATURES

Patented Element. Full Line of Sizes. Quickly Cleaned. Easily Installed. Ample Capacity. Positive Protection. Leak-proof. Corrosion Proof.

For use with Sulphur Dioxide, Freon or Methyl Chloride.

ZENITH CARBURETOR CO.
Subsidiary
BENDIX AVIATION CORP.
Detroit, Michigan

Maurer-Greusel Changes Name To Greusel Distributing Co.

MILWAUKEE—Under a plan of reorganization announced last week, the name of Maurer-Greusel Co., distributor of Crosley refrigerators and radios in this territory, has been changed to Greusel Distributing Co. Frank W. Greusel, president of Maurer-Greusel, heads the new concern.

Vernon Maurer, former partner in the company, resigned recently to become sales manager of Radio Specialty Co., Norge distributor.

In addition to Crosley products, Greusel Distributing Co. handles Thor washers and ironers, L & H electric ranges, and Alcazar gas ranges.

Hartman Shows Stewart-Warner Line in Rochester

ROCHESTER, N. Y.—C. L. Hartman, Inc., local Stewart-Warner distributor, recently conducted an open house showing of the new Stewart-Warner refrigerators for dealers in this territory.

Adolph Bastian is president of the distributorship. Ray Prairie is sales manager.

General Appliance Co. Holds Dealer Showing of New Apex

CHARLOTTE, N. C.—General Appliance Co., recently organized Apex distributor in this territory, held a four-day dealer showing of the Apex line Jan. 5 to 8 in the Charlotte hotel. Lehman Wood, Apex advertising manager, attended the showing.

John W. Huffaker, for 10 years office manager of the Carolinas branch of E. I. du Pont de Nemours & Co., Inc., is president of the new distributorship. Charles Knuckles is vice president, and A. Frank Epting is secretary. Jack Purdum, Apex representative in the southern territory for several years, is sales promotion manager.

Alvey Opens Kelvinator Dealership in Detroit

DETROIT—Alvin E. Alvey, formerly in charge of sales training for the Detroit branch office of Kelvinator, has opened a Kelvinator dealership in the quarters formerly occupied by the branch at Grand Blvd. and Hamilton Ave.

EH&FA Closes Contract with Municipal Utility

WASHINGTON, D. C.—Electric Home & Farm Authority has closed contracts for financing electrical appliance sales with the city of Florence, Ala., which owns and operates the local municipal utility. Contracts have also been closed with the Farmers Rural Utilities, Inc., Bowling Green, Va., and the Richland Cooperative Electric Association, Richland Center, Wis.

Georgia Power Refrigerator Sales Down in 1936

ATLANTA—Although refrigerator sales of Georgia Power Co. for the first 11 months of 1936 were below those of the corresponding period last year, the sales volumes of all other major appliances rose well above their respective marks for the 11-month period of 1935, reports show.

Refrigerator sales dropped from 8,144 to 6,254, but range sales more than made up for this loss, rising to 6,319 units, 2,004 above the 1935 mark of 4,315. Water heater sales rose 31.4% to a unit total of 3,710, compared with 2,547 in 1935. Washers and ironers both showed considerable gains, the former increasing from 680 to 1,317, the latter from 108 to 316.

Sholty Made Vice President of Maxon Advertising Agency

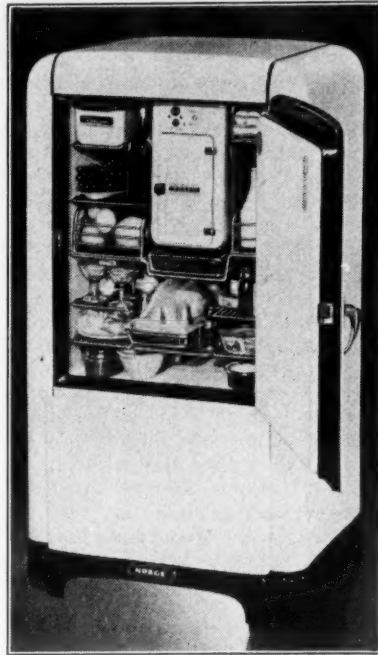
CHICAGO—Les J. Sholty, manager of the Chicago office of Maxon, Inc., has been elected a vice president of the advertising agency, according to announcement by Lou R. Maxon, chairman of the board.

As executive on the Hotpoint account, Mr. Sholty is supervisor of national advertising of Hotpoint electric refrigerators, ranges, laundry equipment, and dishwashers. He has been Maxon's Chicago office manager for five years.

New Crosley Dealership Named in Tampa

TAMPA, Fla.—New Enterprise Hardware Co., owned by J. C. Lamb and Bryan Griffin, has been appointed Crosley dealer by Johnson Distributing Co., here.

Norge 'Low-Temp'



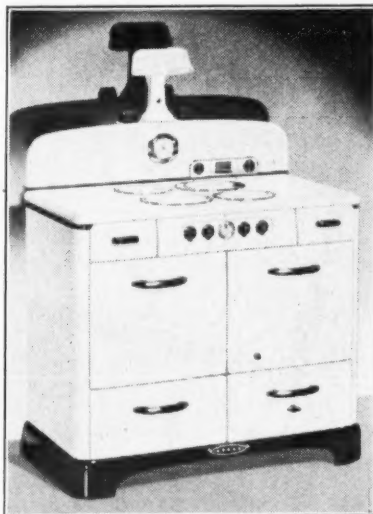
Two evaporators are used in the Norge Low-Temp models.

Ranges Are Matched To Refrigerators

Norge electric ranges are designed in matched combination with Rollator refrigerators. Six models are in the line, ranging from the deluxe ER-40-61, with centrally located cooking elements, to the compact, three-burner ER-20-60.

New features include counter balanced oven door, preventing slamming, and making it possible to leave oven slightly open when using the element for broiling; oven flood light that operates automatically when door is opened; adjustable, smokeless, dull chrome broiler pan with polished chrome grille, and extra powered heating element for broiling; "Chromalox Super-Speed" cooking units, available as extra equipment in place of the standard open coil

New Norge Range



This range is the deluxe model in Norge's line which matches their refrigerators

units; and automatic light signal on oven control.

Automatic oven control, located on the switch panel, contains red and green lights which glow when the oven is turned on. When the desired temperature is reached, the red light automatically turns off, leaving the green to signal that the oven has reached the temperature set and that the switch is still on.

All models have porcelain enamel finish, in white with black base, and in various color combinations. All models, except ER-20-60, are available with red, green, or black hardware. All have a one-piece sealed oven, fully insulated, with removable non-tilting oven racks. Oven vent is in backguard. Electric switches are 15 ampere, three position reciprocating type.

Top model, ER-40-61, has a built-in fully automatic clock and Norge Timer, lamp and condiment set; warming compartment with wire racks and 250W element, one service compartment and two cutlery drawers, automatic oven flood light, and centrally located cooking elements.

Model ER-40-60 has a storage compartment instead of the warming compartment.

Model ER-38-61 has a built-in fully automatic clock with Norge Timer, lamp and condiment set; a warming drawer with 250W element, and one service drawer. Model ER-38-60 has two service drawers, and no warming drawer.

Norge 1937 Key Refrigerator Specifications

| Model | Capacity (Cu. Ft.) | Shelf Area (Sq. Ft.) | No. of Trays | Ice Cubes | Lbs. of Ice | —Exterior Dimensions— Height Width Depth |
|------------------|--------------------|----------------------|--------------|-----------|-------------|---|
| Low-Temp. | | | | | | |
| LTP-81-37 | 8.08 | 17.10 | 4 | 120 | 12½ | 64½ 35 26½ |
| LTP-123-37 | 12.25 | 23.35 | 7 | 192 | 20½ | 64½ 50½ 26½ |
| GN-75-37 | 7.54 | 14.03 | 4 | 120 | 13½ | 64½ 35 26½ |
| Deluxe | | | | | | |
| P-42-37 | 4.25 | 9.06 | 2 | 41 | 4 | 53½ 27½ 22½ |
| P(N) 52-37 | 5.24 | 10.82 | 4 | 83 | 8½ | 57½ 29½ 22 |
| P(N) 61-37 | 6.12 | 12.65 | 4 | 83 | 8½ | 60 31½ 22 |
| P(N) 72-37 | 7.22 | 14.60 | 5 | 104 | 10½ | 63½ 33½ 22 |
| P(N) 81-37 | 8.08 | 15.65 | 5 | 104 | 10½ | 65½ 35½ 22 |
| Standard | | | | | | |
| S-31-37* | 3.10 | 7.01 | 2 | 42 | 4½ | 36 24 21½ |
| S-32-37 | 3.25 | 7.59 | 2 | 42 | 4½ | 46½ 24½ 20½ |
| S-42-37 | 4.24 | 8.85 | 2 | 42 | 4½ | 52½ 24½ 20½ |

*Sink model.

Designed for the lower price market, Model ER-36-60 is equipped with the light signal type oven control, pull-out type broiler, and two service drawers.

The small, compact Model ER-20-60 has three cooking elements, full size oven, and plain heat control with button indicator light. Broiler is located in the oven. This model is produced in white or ivory with black porcelain enamel top.

Centrally located burners, new gas saving oven temperature regulator, colored hardware, automatic electric oven flood light, and "Simmer-Concentrator" burners are featured in the 1937 gas ranges. Exterior design has been harmonized even more closely with the refrigerator, providing a matched kitchen combination. Nine models, with various color combinations and special features, comprise the line.

The automatic oven regulator maintains uniform temperatures by cutting out part of the oven burner as the temperature rises, and relighting as temperature lowers. A new broiler adjustment raises or lowers the Broilator plate while broiler compartment is closed. Full Rock Wool insulation is featured in nearly all models.

The Concentrator burner—of circular design with gas ports on the inside circumference, directs heat toward center of the cooking vessel for greater cooking efficiency. New 1937 ranges feature in addition, on certain models, the new "Simmer-Concentrator" burner, combining the Concentrator burner with a small central simmer burner.

Norge gas ranges are produced in white or various color combinations, with black base. Red, green, or black hardware is available on all ranges. Three series of models are produced; the "40" series, in three models; the "38" series with four models; and the "36" series with two models.

New Features Incorporated In Laundry Equipment

Six models are included in the Norge washer line, three of which are available with either electric or gasoline motors. All washers, from the deluxe Model 87 with 20 gallon capacity to the 13 gallon Model 47, are equipped with the Autobuilt transmission, product of Borg-Warner factories. Electric models all have "lifetime" lubricated motor. Lovel wringers of cadmium plated steel with crepe rubber balloon rolls, are standard equipment on all models. All wringers have instant safety release. A special feature on the top models (87 and 77) is the new pressure indicator wringer, which shows the pressure being applied, assuring proper pressure for every type of fabric.

High grade porcelain is used in the newly designed washer tubs. Models 87, 77, and 67 are produced in white porcelain, and Models 57, 47, and 57-G are of light green porcelain. Tub covers are steam sealed, keeping water hot for a longer period, and Models 87 and 77 have splash ring type tubs.

Models 67, 57, and 47 are available with Briggs and Stratton ½ hp. 4-cycle gasoline motor.

The 1937 ironer line includes seven models.

Special features include: Scratch-proof ironing shoes on all models except NS-7; divided heat elements, permitting savings in current when ironing at one end only; rolls of

double open end type, non-sagging; two-speed control; heavy or damp articles are ironed at low speed, while high speed is used for drier and lighter pieces.

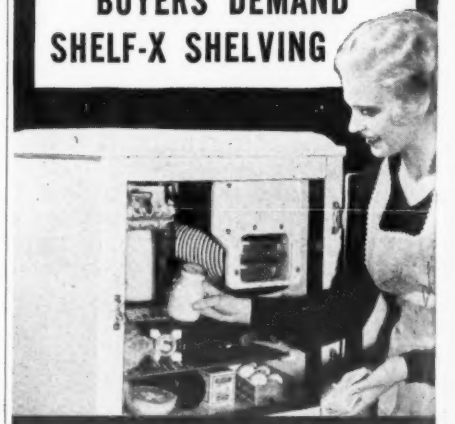
Heat selectors, mounted on top of ironing shoe, control temperature in right or left half of shoe between 250° and 450° F. Release lever tilts the shoe away from the roll for steaming, or provides more space. Heat-trap dome focuses heat toward the roll. Locking composition casters prevent movement of the ironer while in use, and knee control leaves both hands free to handle clothes. Table top cabinet forms a shelf while ironing, and can be used as a utility table.

Three top models in the line are finished in white porcelain enamel with chromium legs; two models are finished in black and white porcelain enamel, and one model, with optional cover as additional equipment, is finished in green enamel.

The Norge portable press-ironer is suited for hotel or apartment house use, and can be hung on a closet hook or placed on a convenient shelf. The press-ironer will do all flat work, shirts, pleated articles, and presses clothes. Ironer shoe is 26 inches long by 10 inches wide, made of cast-aluminum. Double thermostats control the heating element, permitting the use of one end only, if desired. The ironer shoe is slightly curved. Two hand controls are supplied for balanced movement. There are no mechanically moving parts.

A free sample of SHELF-X will show you why...

MODERN REFRIGERATOR BUYERS DEMAND SHELF-X SHELVING



Knowing the advantages and convenience of Shelf-X*, modern buyers insist on this up-to-date refrigerator shelving. Shelf-X provides a firm, flat surface shelf upon which containers can be moved freely without tipping. It supports small objects; does not permit them to drop through. Shelf-X is attractive, too. Its diamond design adds to the appearance of the refrigerator.

Excellent for air-conditioning units

Because it has a large open area that assures free circulation of air, Shelf-X is as good for air-conditioning screening as it is for refrigerator shelving.

Write for free sample of Shelf-X and complete details. Address Dept. 21-ACR MANUFACTURED BY *Registered Trade-mark

U.S. UNITED STATES GYPSUM COMPANY STEEL PRODUCTS DIVISION, 300 W. ADAMS ST. CHICAGO



WEATHERHEAD REFRIGERATION PARTS • "ALWAYS BETTER" THE WEATHERHEAD COMPANY • CLEVELAND, OHIO

Three Reasons Why

AERO SELF-ALIGNING SEALS

SELL FASTER

1 - LIST PRICE \$1.50

2 - LIBERAL TRADE DISCOUNTS

3 - FULLY GUARANTEED



They Seal and Seal Immediately! "THE LONGER THE WEAR - THE BETTER THE SEAL"

COVERED BY U.S. PATENT 2,067,540 OTHER PATENTS PENDING

AERO PRODUCTS CORPORATION 36-08-34th St., Long Island City, New York

At the Speakers' Table When Frigidaire Previewed Its 1937 Plans



Top Row: (1) Ernest R. Breech, chairman of the board of North American Aviation, Inc.; (2) E. G. Blechler, general manager of Frigidaire; (3) Richard H. Grant, vice president of General Motors in charge of sales; (4) W. F. Armstrong, Frigidaire assistant general manager; (5) Roy E. Smithson, Frigidaire commercial manager; (6) Lee A. Clark, household advertising and sales promotion manager; (7) David M. Noyes, executive

vice president of Lord & Thomas, the Frigidaire advertising agency, Chicago.

Middle Row: (8) R. F. Trant, president of R. F. Trant Co., Norfolk, Va., pioneer distributor; (9) William Baker, president of Baker Advertising Co., Toronto; (10) L. C. Shannon, Frigidaire Canadian manager; (11) Charles T. Lawson, household sales manager; (12) H. J. Walker, Jr., public utilities division manager; (13) V. A. Hetzel,

installation and service manager; (14) Ellsworth Gilbert, zone manager and convention director.

Bottom Row: (15) Frank R. Pierce, household division manager; (16) Lewis B. Rock, publisher of Dayton Morning Journal and Evening Herald; (17) Edward R. Godfrey, works manager; (18) E. B. Newill, chief engineer; (19) Ray Fox, General Motors Acceptance Corp.; (20) Carl A. Copp, general sales manager.

Canvass and Re-Canvass Jumps Dealers Sales

HOT SPRINGS, Ark.—Rigid adherence to a policy of canvassing and re-canvassing is largely responsible for Kilgore Bros.' 50-unit increase in refrigerator sales this year over 1935, according to store officials.

At least three men are assigned to the task of covering and recovering old territory from month to month, and consequently a good percentage increase in this territory is maintained.

This canvassing makes direct mail advertising unnecessary, but newspaper advertising has been consistently used at bi-weekly intervals. Follow-ups are not neglected, and any contacts made with customers on the sales floor are carefully developed.

Home Economists Perform Varied Services

SAN ANTONIO, Tex.—Home economists of San Antonio Public Service Co.'s home service division hold all sorts of appliance demonstrations, supply information pertinent to menus, recipes, canning, party preparation, kitchen planning, or practically any other form of home management, report all complaints, and render many other valuable services to the company's consumers.

During the first 10 months of this year, 37,477 recipes tested in the utility's Spanish Patio Kitchen, were given out to customers by request. Approximately 2,605 miscellaneous home service pamphlets were distributed.

A courtesy call is made on each new customer connecting to the utility's gas and electric lines, and the company's policies and services discussed.

Columbus, Ga., Dealer Starts New Finance Plan

COLUMBUS, Ga.—A finance plan involving a \$12 down payment and a provision that no further billing be made until 30 days after Easter has been put into effect by Electric Appliance Co.

This arrangement applies only to refrigerators purchased within the first 60 days of this year. When a customer buys a refrigerator under this plan, he may have it delivered either immediately or at the expiration of the 60-day period.

Direct mail advertising urging people to take advantage of this plan has been distributed throughout Columbus and the surrounding territory.

Ice Man Sneaks New Norge Home after Dark

NEWARK—An ice man bought an electric refrigerator last week from B. & O. Radio, Inc., Norge distributor—but he's not planning to tell his customers about it.

Brought into the B. & O. Showroom by a local Norge dealer, the man selected a washer and a refrigerator. He insisted, however, that delivery of the refrigerator be made after dark.

"You see," he explained, "I'm in the ice business—and I don't want any of my neighbors to see me getting an electric refrigerator."

N. Y. Herald Tribune Begins New Homemakers' Page

NEW YORK CITY—A new weekly editorial department for homemakers, combining news and facts about house maintenance, modernization, and construction by Elizabeth Gordon and Dorothy Ducas was inaugurated Jan. 3 in the New York Herald Tribune.

PROFITABLE SALES METHODS

Tripled Sales Follow Use of 'Bunched' Display on Furniture Dealer's Floor

LITTLE ROCK, Ark.—Three times as many refrigerators were sold from a "bunched" display in his furniture store during the past year, as when he used smaller unit displays the year before, states John H. Rule, president of the Manufacturer's Furniture Co. here.

Handling Norge and Kelvinator, and purchasing its stock in carload lots, the firm has grouped as many as 50 refrigerators in one display. Stock turnover was noticeably increased after these mass displays were used, Mr. Rule states.

Use of a small refrigerator display room, with a model kitchen adjacent,

also has helped boost refrigerator sales, says Mr. Rule. The display room is one of a series which open up one into the other, each of which contains electrical appliances.

Third factor which has helped increase this dealer's sales, according to his report, is the method of contacting prospects which is followed. Four or five salesmen do outside contacting; they close all sales possible.

"We always try to get the refrigerator into the home when the prospect is undecided," the dealer said. "After a period of demonstration it is much easier to close the deal."

Manufacturers and Dealers Use 'Courage of Kay' To Promote Interest in All-Electric Kitchens

NEW YORK CITY—Several manufacturers of electrical appliances and retailers are using the kitchen modernizing film, "The Courage of Kay," to increase prospect interest in the all-electric kitchen and home appliances, reports National Kitchen Modernizing Bureau, sponsor of the talkie.

Manufacturers using the picture include Westinghouse Electric & Mfg. Co., Edison General Electric Appliance Co., General Electric Co., and Chicago Flexible Shaft Co.

The H. A. West Co., appliance dealer in Portland, Ore., used special invitations to get prospects to attend the showing there. Using an electric range as a special door prize, the dealer had prospects fill out blanks for the prize drawing, on which they checked the appliances already in use in their homes, and the others in which they were interested.

Utility companies now showing the picture include Union Electric Light & Power Co., St. Louis; Connecticut Light & Power Co.; Iowa Public Service Co.; Jersey Central Power & Light Co.; Pittsfield (Mass.) Electric

Co.; San Antonio (Texas) Public Service; Edison Electric Illuminating Co., Boston.

Brooklyn Edison Co.; People's Power Co., Moline, Ill.; Ellenville (N.Y.) Electric Co.; Ohio Edison Co., Akron; Idaho Power Co., Boise; Niagara Hudson Power Co.; Union Gas & Electric Co., Cincinnati; Monongahela West Penn Public Service Co., Fairmont, West Va.; Potomac Edison Co., Hagerstown, Md.; Philadelphia Electric Co.; and Portland General Electric Co.

Local organizations other than utilities using "The Courage of Kay" include Electrical Association of Philadelphia, Electrical League of Rhode Island, Rochester Chamber of Commerce, Better Housing Program Committee of Sarasota, Fla., Federal Housing Administration clinics, and women's clubs in Buffalo, and Cambridge, Mass.

Newspapers exhibiting the kitchen modernizing talkie in connection with their cooking schools are the Ogden (Utah) Standard Examiner, the Patchogue (Long Island) Advance, and the Washington (D.C.) Herald.

Contest Leads to Novel Booklet Distribution

LOS ANGELES—Novel means of introducing General Electric Co.'s new promotion booklet, "How to Buy Meat for Home Consumption," were employed by George Belsey Co., G-E distributor here, according to R. E. Mangan, advertising manager.

A contest was instigated to decide upon the most effective means of distributing this booklet, with prizes for the three best ideas presented at the next meeting.

Mrs. Chamberlin, of Ladd Hoffman's Beverly Hills store, won first prize with the suggestion that a display card be placed in a local butcher shop, directing customers to ask the butcher about the booklet; the butcher would be given a supply of appliance-survey cards which each customer must fill out before obtaining the booklet, and would be paid for resulting sales on the regular profit-sharing plan.

Second prize suggestion, offered by Mr. Porter of Baldwin Russell's store in Huntington Park, was that the booklets be distributed by butchers to customers whose credit they knew to be good.

Suggestion that the booklet be used as a door opener was made by Mr. Jones, of George Haney's Glendale store. Instead of giving the book outright, he suggested that the salesman tell the housewife that he would simply like her opinion of it. If she is interested, he would tell her that she might obtain a copy by calling at her G-E dealership.

Research Group Releases First Booklet in Series

NEW YORK CITY—Prepared for presentation before club groups or women's organizations in connection with Kelvinator's fall prospect-getting promotion, the first of a series of lectures on homemaking topics was released recently by the Temperature Research Foundation here.

The lecture first outlines what Kelvinator has done to lift housework from the drudgery class into that of an art or science, by developing electrical refrigerators, ranges, heating and cooling units, and numerous other appliances.

Next it explains the work which the Temperature Research Foundation was designed to do in helping housewives with temperature control problems as they apply to cooking, heating, by supplying written material, radio skits, and lectures.

Prepared under the direction of the Foundation's dietitian, Miss Lulu Graves, the lecture then tells what to feed Jack and Jill and their father for luncheon. Whether it is for the quickly prepared home luncheon, or the box luncheon prepared beforehand, the paper suggests a number of simple menus for sandwiches and beverages.

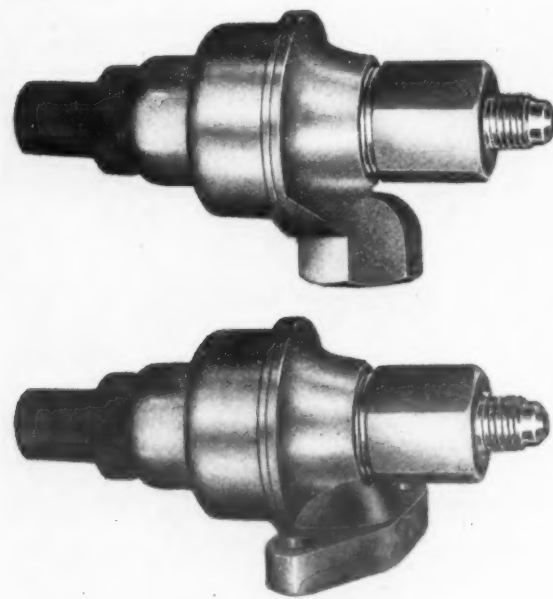
It shows how foods stored in the refrigerator can be kept in fresh condition and used in preparing sandwiches from the leftovers.

STANDARD REFRIGERATING APPLIANCES

New Valves

SMALL IN SIZE . . .

. . . BIG IN PERFORMANCE



TYPE "F"

AUTOMATIC EXPANSION VALVES

These valves are especially designed for the smaller units—domestic cabinets—beverage coolers—water coolers—room coolers—ice cream cabinets. Bodies of these valves are hot pressed die forgings, close grained and non-porous. The springs are extra length for smooth, velvety adjustments. Needles are special alloy, adaptable for any refrigerants. The breather cap is of live rubber with threaded metal insert. And these are just a few of the many outstanding construction features of these superior valves. No. 1582, 1/4" S. A. E. inlet—1/4" F. P. T. outlet. No. 1583, 1/4" S.A.E. inlet—1 3/4" bolt centers. Type "F" valves are interchangeable with all refrigerants except ammonia.

Write for bulletins on the complete line of Blue Ribbon Appliances.

AMERICAN INJECTOR COMPANY
RILEY ENGINEERING CORP. Associate
1481-14TH ST. • PHONES LAFAYETTE 0350-0552 • DETROIT, MICH.

WOLVERINE COPPER TUBING

The famous Wolverine Solder Seal keeps the interior as clean as the day it was made. In addition, each coil is wrapped in heavy crepe paper to insure cleanliness and labeled to facilitate handling. Meets all requirements for manufacturer and for service work.

WOLVERINE TUBE CO.

1411 CENTRAL AVENUE

DETROIT, MICHIGAN

Honeychurch Joins Peerless Air Conditioning Sales Staff

CHICAGO—Appointment of Walter A. Honeychurch to the sales staff of Peerless of America, Inc., has been made by M. W. Knight, sales manager of the organization. Mr. Honeychurch will assist Mr. Knight as specialist in air-conditioning sales, with headquarters here.

For the past two years, Mr. Honeychurch has been branch manager of Lipman Refrigeration Sales and Service, Detroit. Prior to that time, he was Chicago factory branch manager for Copeland Refrigeration Corp.

Air Conditioning Surveys

Published on this page is the last group of surveys of air-conditioning installations reported to AIR CONDITIONING AND REFRIGERATION NEWS by public utilities covering the areas named. The surveys published in the last two issues have shown installations by size and market classification for most of the major cities in the United States.

Providence, R. I.

| Classification | Prior to 1935 | | During 1935 | | During 1936 | | Total | |
|----------------------|---------------|------------|-------------|---------------|-------------|---------------|-----------|-----------------|
| | No. | Hp. | No. | Hp. | No. | Hp. | No. | Hp. |
| Hotels | 2 | 17 | 2 | 7.37 | 2 | 72 | 6 | 96.37 |
| Offices | 1 | 3.25 | 0 | 0 | 2 | 2.66 | 3 | 5.91 |
| Residences | 0 | 0 | 2 | 4.92 | 3 | 4 | 5 | 8.92 |
| Restaurants | 5 | 59.5 | 0 | 0 | 5 | 100.75 | 10 | 160.25 |
| Shoe Stores | 0 | 0 | 1 | 16 | 0 | 0 | 1 | 16 |
| Clothing Stores | 0 | 0 | 0 | 0 | 2 | 23 | 2 | 23 |
| Jewelry Stores | 0 | 0 | 1 | 11 | 1 | 7 | 2 | 18 |
| Broadcasting Studios | 1 | 23 | 1 | 55 | 2 | 125 | 4 | 203 |
| Funeral Parlors | 0 | 0 | 1 | 9.5 | 0 | 0 | 1 | 9.5 |
| Department Stores | 1 | 23 | 1 | 55 | 2 | 125 | 4 | 203 |
| Theaters | 3 | 630 | 0 | 0 | 0 | 0 | 3 | 630 |
| Drug Stores | 1 | 3.25 | 0 | 0 | 0 | 0 | 1 | 3.25 |
| Miscellaneous | 0 | 0 | 0 | 0 | 2 | 2.66 | 2 | 2.66 |
| Totals | 13 | 736 | 8 | 103.79 | 20 | 348.07 | 41 | 1,187.86 |

Gulf States Utilities Co., Beaumont, Texas Territory

| Classification | Prior to 1935 | | During 1935 | | During 1936 | | Total | |
|-------------------------|---------------|------------|-------------|------------|-------------|------------|-----------|--------------|
| | No. | Tons | No. | Tons | No. | Tons | No. | Tons |
| Residences | 1 | 25 | 2 | 2 | 2 | 33 | 5 | 60 |
| Restaurants | 2 | 60 | 1 | 8 | 3 | 36 | 6 | 104 |
| Offices | 1 | 7 | 0 | 0 | 0 | 0 | 1 | 7 |
| Theaters | 1 | 150 | 1 | 60 | 2 | 170 | 4 | 380 |
| Dry Cleaners | 1 | 6 | 0 | 0 | 0 | 0 | 1 | 6 |
| Retail Stores | 1 | 6 | 0 | 0 | 2 | 23 | 3 | 29 |
| Air Conditioning Dealer | 0 | 0 | 1 | 10 | 0 | 0 | 1 | 10 |
| Department Stores | 0 | 0 | 1 | 20 | 0 | 0 | 1 | 20 |
| Federal Court Room | 0 | 0 | 1 | 10 | 0 | 0 | 1 | 10 |
| Office and Sales Room | 0 | 0 | 2 | 82 | 0 | 0 | 2 | 82 |
| Barber Shop | 0 | 0 | 1 | 4 | 0 | 0 | 1 | 4 |
| Bank | 0 | 0 | 0 | 0 | 1 | 60 | 1 | 60 |
| County Court House | 0 | 0 | 0 | 0 | 1 | 100 | 1 | 100 |
| City Auditorium | 0 | 0 | 0 | 0 | 1 | 200 | 1 | 200 |
| Total | 7 | 254 | 10 | 196 | 12 | 622 | 29 | 1,072 |

Fresno, Calif., Area

| Classification | Prior to 1935 | | During 1935 | | During 1936 | | Total | |
|------------------------------|---------------|------------|-------------|---------------|-------------|-----------------|------------|-----------------|
| | No. | Hp. | No. | Hp. | No. | Hp. | No. | Hp. |
| Apartment Houses | 1 | 12 | 0 | 0 | 0 | 0 | 1 | 12 |
| Banks | 1 | 88 | 0 | 0 | 0 | 0 | 1 | 88 |
| Funeral Parlors | 1 | 8.50 | 0 | 0 | 2 | 8 | 3 | 16.50 |
| Offices and Office Buildings | 7 | 490 | 12 | 92.20 | 27 | 554.27 | 55 | 1,106.47 |
| Residences | 17 | 39.25 | 14 | 34.50 | 27 | 69.75 | 58 | 143.50 |
| Restaurants | 2 | 11 | 6 | 60.25 | 8 | 94.44 | 16 | 165.69 |
| Retail Stores | 3 | 3.25 | 2 | 15.70 | 13 | 60.81 | 18 | 79.76 |
| Beauty Parlors | 0 | 0 | 1 | 1.75 | 0 | 0 | 1 | 1.75 |
| Hospitals | 0 | 0 | 2 | 7.85 | 5 | 43.80 | 7 | 51.65 |
| Recreation Centers | 0 | 0 | 1 | 24 | 0 | 0 | 1 | 24 |
| Theaters | 0 | 0 | 4 | 141.50 | 3 | 180.50 | 7 | 322 |
| Hotels | 0 | 0 | 0 | 0 | 2 | 86 | 2 | 86 |
| Total | 32 | 652 | 42 | 377.75 | 87 | 1,097.57 | 170 | 2,097.32 |

Charleston, S. C.

| Classification | Prior to 1935 | | During 1935 | | 6 Mos., 1936 | | Total | |
|----------------|---------------|--------------|-------------|-----------|--------------|--------------|----------|------------|
| | No. | Hp. | No. | Hp. | No. | Hp. | No. | Hp. |
| Hotels | 1 | 10 | 0 | 0 | 0 | 0 | 1 | 10 |
| Retail Stores | 1 | 160.5 | 0 | 0 | 2 | 134.5 | 3 | 295 |
| Restaurants | 0 | 0 | 1 | 13 | 0 | 0 | 1 | 13 |
| Total | 2 | 170.5 | 1 | 13 | 2 | 134.5 | 5 | 318 |

Package Air Conditioning



This giant control panel was used to show Kelvinator distributors the ease with which the conditioning system in the Kelvin Home may be transferred from winter to summer operation. Refrigerating machine is at extreme left; next to it is the automatic heating equipment.

- AIR CONDITIONING NEWS -

Public Hearings on Cleveland Building Code Scheduled

CLEVELAND—Public hearings on Cleveland's new building code are scheduled to be held sometime this month.

The proposed code, in the process of formation for nearly two years, governs the installation of air-conditioning equipment, and contains regulations for other equipment developed since the present antiquated ordinance was effected.

One portion of the proposed ordinance grants the city's electrical department the power to discontinue the sale of any appliance which it considers unsafe, providing due notice has been given to manufacturers or distributors of such products. This section was designed to meet complaints by leaders of the Electrical Workers' Union that many appliances are being sold here that are unsafe for the uses to which they are put.

The proposed code establishes as law many decisions which, under the existing ordinance, are left to the discretion of the electrical inspection department. This measure is said to meet the general approval of electrical contractors, building manager and owner groups, and union labor.

The new ordinance also provides for a board of review with broad powers to pass upon appeals from the building department, and to establish or alter regulations and rules governing enforcement of the code. This board is to consist of five members appointed by the mayor for overlapping five-year terms.

Board members will be chosen from the Cleveland Engineering Society, Cleveland Chapter of the National Electrical Contractors' Association, Electrical Maintenance Engineers' Association of Cleveland, Cleveland Federation of Labor, and Cleveland Chapter of the American Institute of Architects.

St. Louis Lithographer Buys Complete Conditioning System

ST. LOUIS—Woodward and Tiernan Printing Co., local color lithographer, has equipped its plant with a year-round air-conditioning system installed by Kupferle-Hicks Heating Co., Frick distributor in this territory. The equipment cost approximately \$20,000.

The main litho-press room, 180 by 80 ft., receives 27,000 cu. ft. of air per minute from the main conditioning plant, fed to the room through a tapered duct. A separate unit conditioner supplies 3,200 c.f.m. of "all fresh" air to the photo-composing room.

Refrigeration for both systems is furnished by an 8½ by 6 Freon-12 compressor. This machine is driven at either 327 or 450 r.p.m. by a 50-hp. two-speed motor. During a recent one-month test, the system maintained inside wet and dry bulb temperatures constant within 1%.

Domestic Oil Burner Sales Up 38% over 1935

NEW YORK CITY—New orders for domestic oil burners for the first 10 months of 1936 totaled 168,578, an increase of 38% over the corresponding period of 1935, when orders were 122,133, according to figures compiled by Oil Burner Institute from Bureau of Census reports.

Orders for distillate oil burners for the first 10 months of the year were 318,496, a gain of 58% over the same period during 1935, when orders totaled 202,091.

Domestic oil burner orders were divided as follows: domestic mechanical draft, 138,718; natural draft, 619; industrial mechanical draft, 10,658; natural draft, 1,438; boiler burner units, 11,804; and furnace burner units, 5,341.

Florida Power and Light Co. (Greater Miami Area)

| Classification | Prior to 1935 | | During 1935 | | 10 Mos., 1936 | | Total | |
|--------------------------|---------------|--------------|-------------|---------------|---------------|---------------|------------|----------------|
| | No. | Hp. | No. | Hp. | No. | Hp. | No. | Hp. |
| Apartment Houses | 0 | 0 | 1 | 2.06 | 0 | 0 | 1 | 2.06 |
| Theaters | 3 | 572 | 2 | 208.75 | 3 | 200 | 8 | 980.75 |
| Restaurants | 3 | 79 | 2 | 9.05 | 1 | 60.3 | 6 | 148.35 |
| General Offices | 1 | 14 | 0 | 0 | 13 | 35 | 14 | 49 |
| Private Offices | 3 | 2.8 | 4 | 5.81 | 5 | 3.16† | 12 | 11.77 |
| Department Stores | 2 | 112.5 | 1 | 59.5 | 3 | 169.4 | 6 | 341.4 |
| Dress Shops | 2 | 37.85 | 0 | 0 | 1 | 6.5 | 3 | 44.35 |
| Opticians' Offices | 1 | 1.1 | 2 | 2.39 | 0 | 0 | 3 | 3.49 |
| Dentists' Offices | 0 | 0 | 3 | 3.49 | 0 | 0 | 3 | 3.49 |
| Tap Rooms and Bars | 0 | 0 | 2 | 14 | 4 | 72.93 | 6 | 86.93 |
| Beauty Shops | 2 | 29.5 | 1 | 6.75 | 0 | 0 | 3 | 36.25 |
| Barber Shops | 0 | 0 | 1 | 2.2 | 0 | 0 | 1 | 2.2 |
| Operating Rooms | 0 | 0 | 1 | 5.75 | 1 | .77 | 2 | 6.52 |
| Shoe Stores | 0 | 0 | 3 | 25.5 | 2 | 16.52 | 5 | 42.02 |
| Showrooms | 0 | 0 | 2 | 19.5 | 0 | 0 | 2 | 19.5 |
| Jewelry Stores | 0 | 0 | 1 | 2.05 | 2 | 21.7 | 3 | 23.75 |
| Rest Rooms | 0 | 0 | 1 | 2.05 | 0 | 0 | 1 | 2.05 |
| Audition Rooms | 0 | 0 | 1 | .55 | 0 | 0 | 1 | .55 |
| Broadcasting Stations | 0 | 0 | 1 | 24.83 | 0 | 0 | 1 | 24.83 |
| Stock Exchange | 0 | 0 | 1 | 3.21 | 0 | 0 | 1 | 3.21 |
| Repair Shops | 0 | 0 | 1 | 1.52 | 0 | 0 | 1 | 1.52 |
| Five and Ten Cent Stores | 0 | 0 | 1 | 120 | 0 | 0 | 1 | 120 |
| Projection Rooms | 0 | 0 | 1 | 1.05 | 0 | 0 | 1 | 1.05 |
| Drug Stores | 0 | 0 | 0 | 0 | 3 | 41.12† | 3 | 41.12 |
| Funeral Homes | 2 | 16.7 | 0 | 0 | 1 | .77 | 3 | 17.47 |
| Candy Factories | 1 | 2.2 | 0 | 0 | 1 | .9 | 2 | 3.1 |
| Bakeries | 1 | 5.5 | 0 | 0 | 0 | 0 | 1 | 5.5 |
| Residences | 1 | 1.1 | 8 | 20.58 | 18 | 26.19* | 27 | 47.87 |
| Banks | 0 | 0 | 1 | 25.75 | 2 | 43.88 | 3 | 69.63 |
| Tailors | 0 | 0 | 1 | 2.05 | 0 | 0 | 1 | 2.05 |
| Court Rooms | 0 | 0 | 1 | 38 | 0 | 0 | 1 | 38 |
| Casino and Offices | 0 | 0 | 1 | 324 | 0 | 0 | 1 | 324 |
| Grocery Stores | 0 | 0 | 0 | 0 | 1 | 17.5 | 1 | 17.5 |
| Airline Offices | 0 | 0 | 0 | 0 | 1 | 2.17 | 1 | 2.17 |
| Apparatus Rooms | 0 | 0 | 0 | 0 | 2 | 18 | 2 | 18 |
| Night Clubs | 0 | 0 | 0 | 0 | 1 | 25 | 1 | 25 |
| Hotel Pantries | 0 | 0 | 0 | 0 | 1 | 25 | 1 | 25 |
| Men's Shops | 0 | 0 | 0 | 0 | 1 | 17.5 | 1 | 17.5 |
| Industries | 0 | 0 | 0 | 0 | 1 | 4 | 1 | 4 |
| Total | 22 | 906.5 | 45 | 912.79 | 68 | 808.31 | 135 | 2,627.6 |

*Horsepower for 14 jobs reported. †Horsepower for 3 jobs reported. ‡Horsepower for 4 jobs reported.

Hartford, Conn.

| Classification | Prior to 1935 | | During 1935 | | 11 Mos., 1936 | | Total | |
|---------------------|---------------|--------------|-------------|------------|---------------|------------|------------|----------------|
| | No. | Hp. | No. | Hp. | No. | Hp. | No. | Hp. |
| Beauty Parlors | 0 | 0 | 1 | 7 | 0 | 0 | 1 | 7 |
| Candy Manufacturers | 1 | 2 | 0 | 0 | 1 | 3 | 2 | 5 |
| Cocktail Rooms | 0 | 0 | 1 | 16.5 | 0 | 0 | 1 | 16.5 |
| Department Stores | 1 | 389.5 | 1 | 9 | 0 | 0 | 2 | 398.5 |
| Furriers | 1 | 34.5 | 0 | 0 | 0 | 0 | 1 | 34.5 |
| Hospitals | 0 | 0 | 2 | 8 | 0 | 0 | 2 | 8 |
| Industrial | 3 | 135 | 0 | 0 | 0 | 0 | 3 | 135 |
| Office Buildings | 1 | 80 | 1 | 90 | 2 | 285 | 4 | 455 |
| Offices | 3 | 3.5 | 3 | 7.5 | 3 | 2 | 9 | 13 |
| Residences | 1 | 2 | 1 | 1 | 1 | 3 | 3 | 6 |
| Restaurants | 2 | 16.5 | 3 | 37 | 4 | 40.5 | 9 | 94 |
| Stores | 0 | 0 | 1 | 15 | 3 | 16.5 | 4 | 31.5 |
| Theaters | 1 | 167.5 | 0 | 0 | 0 | 0 | 1 | 167.5 |
| Funeral Homes | 0 | 0 | 0 | 0 | 1 | 10 | 1 | 10 |
| Total | 14 | 830.5 | 14 | 191 | 15 | 360 | 138 | 1,381.5 |

Tulsa, Oklahoma

| Classification | Prior to 1935 | | During 1935 | | During 1936 | | Total | |
|-------------------------|---------------|--------------|-------------|---------------|-------------|------------|------------|-----------------|
| | No. | Hp. | No. | Hp. | No. | Hp. | No. | Hp. |
| Banks | 2 | 347 | 2 | 212 | 0 | 0 | 4 | 559 |
| Clubs | 1 | 50 | 0 | 0 | 1 | 55 | 2 | 105 |
| Doctors and Dentists | 3 | 9 | 0 | 0 | 0 | 0 | 3 | 9 |
| Hospitals | 0 | 0 | 1 | 1.50 | 0 | 0 | 1 | 1.50 |
| Offices | 9 | 25 | 5 | 57 | 4 | 199 | 18 | 281 |
| Residences | 7 | 18 | 23 | 96 | 23 | 72 | 53 | 186 |
| Restaurants | 5 | 128 | 0 | 0 | 3 | 27 | 8 | 155 |
| Stores—Dept. and Retail | 3 | 312 | 5 | 54 | 2 | 40 | 10 | 406 |
| Theaters | 4 | 726 | 0 | 0 | 0 | 0 | 4 | 726 |
| Total | 34 | 1,615 | 36 | 420.50 | 33 | 393 | 101 | 2,428.50 |

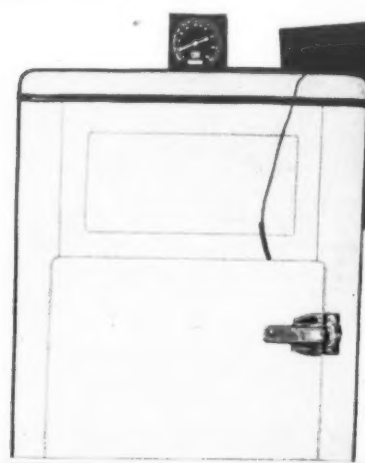
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Ask for catalog covering complete line of Fittings, Valves, Condensing Water Regulators, and Compressor Parts</

Ohio Dairy Puts Refrigerated Truck into Service

PAINESVILLE, Ohio — Gongwer-Frizzell Co., manufacturer of ice cream, recently has put into service a 400-gallon ice cream body built by Warnsman, Inc., of Cleveland, for use in its daily delivery runs. Zero temperature is maintained inside the body by Kold-Hold and Kelvinator equipment. The body is insulated with 3-inch Dry-Zero Sealpad and blanket, used in combination to form 6 inches of insulation.

Forshea Distributes Mills

FORT WAYNE, Ind.—Forshea Refrigeration Service Co., 1120 Michigan Ave., has been appointed distributor for Mills condensing units in the Fort Wayne district, according to R. F. Polley, Mills sales manager.

Freezer Installed on Ship

SHANGHAI, China—Frost Bland & Co., Super-Cold distributor here, recently installed a five-gallon Super-Cold freezer.

—COMMERCIAL REFRIGERATION—

Belsey Uses Pictorial Booklet to Show Extent & Flexibility of G-E Line to 15,000 California Business Men

LOS ANGELES—Designed as an all-inclusive pictorial presentation of General Electric's commercial refrigeration sales story in the California territory, an unusual 24-page booklet in colors has recently been sent to about 15,000 business men in the state by the George Belsey Co., Ltd., G-E distributor. R. E. Mangan, Belsey advertising manager, prepared the booklet with the view of reaching specialized groups of business men.

Mr. Mangan states that the objective sought by the booklet as promotional material is to present G-E commercial equipment's possibilities throughout a wide market range, stressing flexibility, operating success in existing installations, and presentation of testimonials from satisfied users. It was published to serve both as an aid to salesmen in the field and as an advertising medium, says Mr. Mangan.

Following a prefatory statement to the effect that the California climate offers "Refrigeration's Severest Test," the booklet presents several pages of black rotogravure illustrations showing G-E installations made by the Belsey company in several of the famed California "super markets," neighborhood food stores, Hollywood restaurants and bars, coffee shops, night clubs, beer gardens, hotels, hospitals, breweries, wineries, and various other commercial and industrial installations.

Using the "Problem-Solution" plan of installation presentation, G-E equipment in the Los Angeles "Wilshirmart" and "Thrifmart" are shown. In the first of these, the booklet states that the refrigeration problem was: "To overcome the disadvantages of a single temperature and humidity in all coolers and cases in the Wilshirmart, which always result when commonplace ammonia systems are used. Instead, to provide proper

temperatures and humidities for the different requirements of this large market."

The solution was: "Installed four machines, each to give correct temperatures and humidities for specific boxes and coolers. For example, the machine operating the steel pipe coils, inactive during defrosting, is not required to run partially loaded to operate another piece of equipment. Results, lower operating cost, better refrigeration."

One of the most unusual commercial refrigeration installations by the Belsey distributorship shown in the booklet is that in the Death Valley Hotel, first equipped with G-E apparatus in 1930, which, says the promotion piece, "solved North America's most difficult refrigeration problem."

A facsimile of a letter from an official of the Death Valley Hotel Co., Ltd., addressed to the Belsey company, states that seven G-E water coolers and refrigerators were originally installed. Subsequently, seven orders for complete refrigerating systems and enlargements were placed with the Los Angeles distributorship for use in Furnace Creek Inn, Furnace Creek Ranch and Auto Camp, Furnace Creek Service Station, and the Amargosa hotel at Death Valley Junction.

All these, the user said, supplied "satisfactory service" in the "hottest part of the civilized globe." High temperature conditions made the service factor, with a minimum of repairs, essential, the testimonial said.

G-E water coolers get a big play in the centerspread of the Belsey booklet under the caption: "9 A. M. Efficiency All Day Long." Chief among installations shown is that in the Shell Oil Co. building, San Francisco, where a G-E system serves 800 employees through 127 bubblers on 29 floors.

Under a caption: "Where '40 Degrees' Means 40 Degrees," is pictured a G-E 33-cu. ft. refrigerator installed in the Children's Hospital, San Francisco. This box is used in the hospital's medical laboratory to keep vaccines and serums at proper temperatures, using a specially built system of two-temperature control in double compartments.

Another installation in a banana storage room of the Independent Banana Distributors, Los Angeles, is shown. The problem here was: "To control the ripening process and to keep the stock of fruit that is ripe for market in line with market conditions. Technical problem was the even circulation of temperature and humidity-controlled atmosphere in three rooms, each 30 feet square with low 7-foot ceilings."

Various other refrigeration and water cooling installations are discussed in the booklet by Mr. Mangan. Each of these is presented with the view of a tie-up between G-E equipment and all potential or existing commercial refrigeration problems to be encountered in the California territory.

Super-Cold Makes Refrigerated Truck Installation

SALT LAKE CITY—O. R. Henney, Super-Cold distributor for Utah, reports installation of Super-Cold equipment in a new truck unit operated by Adolph Breiting, wholesale meat dealer here.

This equipment, according to Mr. Henney, maintains a constant temperature of 34-38° F. An insulated waterproof lid to the compressor compartment is provided, to enable service men to reach the compressor from inside the truck.

G-E Introduces 5 Refrigerated Truck Bodies

SCHENECTADY—A new line of five refrigerated truck bodies, including automatic, holdover, and dry-ice types, has been announced by General Electric Co.

This extension of the G-E line provides a body for any class of ice-cream delivery service. Each body is designed to be mounted on a standard 1½ or 2-ton truck chassis.

All of the body space is load space in the new bodies, as the refrigerating unit is located in the skirt compartment. Weight has been saved by using glass-wool and Thermocraft insulation.

In the automatic types, power to drive the refrigerating unit is obtained from the truck motor by means of a power-take-off device and a G-E electromagnetic clutch. The latter operates the condensing unit through a temperature control relay, maintaining a constant temperature in the body.

This clutch is also interlocked with the driver's clutch pedal to disengage the compressor load while the operator is shifting gears. Provision is made to operate the condensing unit during overnight standbys and garaging by means of an auxiliary electric motor equipment, which can be plugged into any standard power supply.

In the holdover types, cooling is provided either by a refrigerator unit mounted in the skirt compartment, or by connecting to the ammonia system at the main plant. The dry-ice type can be charged from inside the body, and cooling distributed by a special aluminum plate.

All of the new truck bodies are built of cold-rolled sheet steel, beaded to increase rigidity and to improve

appearance. Insulation is sealed in moisture-proof walls. Galvanized sheet steel forms the inner liners and is surrounded by 6 inches of insulation—glass wool on the roof and floor and Thermocraft on the side walls.

The 1937 bodies have three compartments of equal size. The two forward compartments are comprised of one large liner divided by an adjustable sheet-metal partition. The rear compartment is a separate liner insulated from the compartment ahead.

When full pay-load capacity as well as empty can space is required, two extra features are offered: (1) a small can compartment built into the right front corner of the skirt, and (2) a rack mounted on the roof with a small ladder extending down the rear of the body.

Westinghouse-Esco Install Beer Cooler on Ship

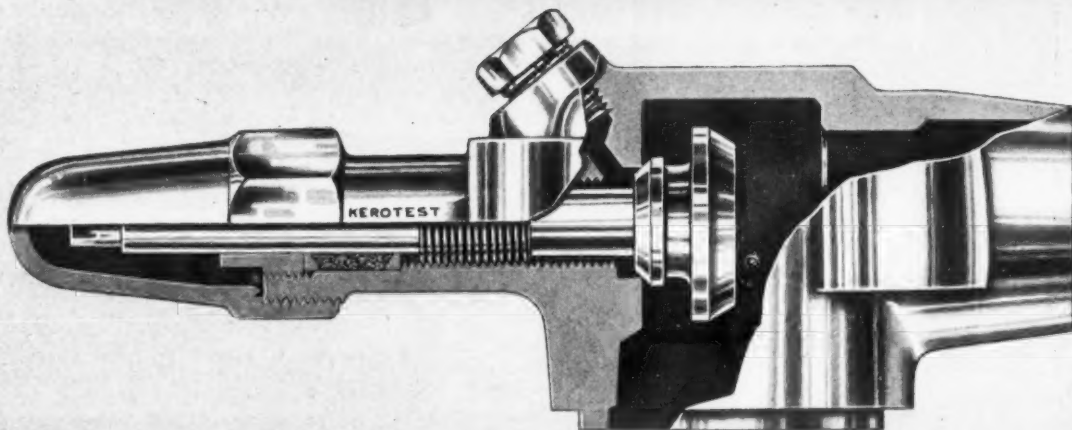
SOERABAYA, Java — The Dutch Cruiser H. M. S. Sumatra has been equipped with a Westinghouse-Esco beer cooler, supplied by N. V. Borneo Sumatra Handel Maatschappij, Westinghouse distributor for the Netherlands East Indies.

In addition to the beer cooler, Westinghouse refrigerators and water coolers have been installed on the Sumatra.

Hertzler Named G-E Vacuum Cleaner Sales Manager

PHILADELPHIA—Lloyd G. Hertzler, for the past five years manager of the merchandise bureau and contractor dealer division of the Electrical Association of Philadelphia, has accepted a position as sales manager of the vacuum cleaner division of General Electric Co. in the Atlantic district, with headquarters in the Mitten Building here.

NO REFRIGERATION OR AIR CONDITIONING SYSTEM CAN BE BETTER THAN THE QUALITY OF ITS VALVES AND FITTINGS



CHECK THE NEW KEROTEST COMPRESSOR VALVES—

Made with a forged, one-piece body eliminating the conventional separate sweat tube insert which is now an integral part of body and having a removable non-rotating, self-aligning stem head less the attendant chatter associated with non-rotating stems. A concealed spring absorbs vibration and shocks due to pulsation of the compressor, preventing annoying noise.



A vital responsibility rests with the kind of valves and fittings that go into the modern refrigeration or air-conditioning unit. That is why Kerotest builds in terms of ultimate service—why Kerotest has steadfastly maintained the highest standard of quality in the face of cut price competition.

This policy continued over the years has established Kerotest leadership throughout the industry. Today Kerotest Valves, Fittings and Accessories are acceptable as standard by the largest manufacturers of refrigerating equipment in the world.

Kerotest Jobbers, carrying warehouse stocks are located in every important industrial center.

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PITTSBURGH, PA.

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Established 1926, Registered U. S. Patent Office as Electric Refrigeration News.

Published Every Wednesday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242.
Cable Address: Cockrell-Detroit

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: \$3.00 per year; 2 years for \$5.00. All other Countries: \$5.00 per year. These rates will be increased on March 1, 1937.

Notice: Please do not pay money to strangers claiming to represent this paper. We employ no subscription solicitors. Send orders and remittances by mail.

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Member, Audit Bureau of Circulations
Member, Associated Business Papers

VOL. 20, No. 3, SERIAL NO. 409
JANUARY 20, 1937

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Strikes

UNREST throughout the land is being felt because of the sit-down strikes which are plaguing various plants of General Motors and its suppliers. The fight between the giant of the motors industry and the Committee for Industrial Organization has gripped the minds and put fear into the hearts of a nation.

Most disturbing is the thought that the attack on the automobile industry has the tacit approval of the government and that it was openly invited by the President when he spoke on the steps of the Detroit city hall shortly before the election. Considering the fact that the automobile industry has rendered notable service in leading the country out of the depression, it is not clear why the President felt called upon to speak as he did.

While no one knows where the present movement may lead, it appears that the refrigeration industry is not in immediate danger of being stopped in the midst of the 1937 season.

First of all, most manufacturers could continue to make product shipments for some time after any strike might be called. Some of them were running full production schedules on 1937 products as early as October; practically all were running at top speed by November. As was pointed out in a News editorial last autumn, one reason for this foresight was the expectation that widespread labor troubles would follow the reelection of Roosevelt. Fulfillment of this prediction finds every major producer well prepared, and forearmed with a heavy bank of warehouse stocks.

Second, the total productive capacity of America's refrigeration products factories is so great that the spiking of one or two big plants—which, unless "come the revolution," is all the C.I.O. could hope to swing simultaneously, with the money at its disposal—would not prevent the nation's dealers from receiving all the refrigerators they will probably be able to sell in 1937.

With multiple dealerships as prevalent as they are today, a strike in the plants of one or two manufacturers would simply mean that dealers would order more units from others they represent.

Moreover, the refrigeration industry is unlike the automotive

in that it is not vulnerable to attacks upon a few parts suppliers. Refrigeration is blessed with a large number of small producers of parts and supplies. These are scattered far and wide, and are so numerous and so flexible in productive capacity that nothing short of a nation-wide general strike could choke off the industry's supply of any particular essential part.

Finally, labor relations in the refrigeration industry are considered excellent, because the standards of wages and working conditions are extraordinarily high. Particularly is this true in some of the larger plants, where above-the-scale wages have long been coupled with a benevolent paternalism to win unusual worker loyalty.

A story is told of a situation in one of these factories, where the workers had been subjected to a campaign of incitement by outside labor organizers and agitators. Being able to find no fault with the wages or conditions, the agitators finally got a small group of workers to demand that the company union be dissolved and an outside one be made sole bargaining agent.

Company officials met with the workers at a mass meeting to listen to the demands. In answer, they simply called the attention of the workers to these facts: (1) Committee members of the company union had been handling their union duties on company time with pay; in an outside union they'd have to spend all their working hours at the bench, and pay hirelings to do the union business. (2) Dissolution of the company union would suspend the operation of its welfare agencies, such as the visiting nurses, who bring free medical care to families of employees.

Upon hearing this, the mass meeting voted practically by acclamation to maintain the company union, and threw out bodily the outside agitators who were the cause of it all.

— QUOTED —

Cloud Over Recovery

THE progress that has been made in the United States toward economic recovery has been substantial, but the country is by no means yet out of the woods of depression.

The annual report of the Secretary of Commerce shows that, while recovery continued in 1936, we are still far from the 1928-29 levels from which business slipped so suddenly and disastrously.

Whether or not recovery will continue in 1937 depends to a very large extent upon the attitude of employers to employees and of employees to employers.

The darkest cloud hanging over American business today is labor unrest—and particularly in the automobile industry, which so far has led the parade toward recovery, and which, for the most part, appears to have maintained an enlightened position with respect to its employees.

And the most disturbing thing is not the move to organize this and other industries from the outside, but the methods that have been adopted in many instances to bring this about.

The refusal by workers to live up to signed contracts or the awards of arbitration boards, and the inauguration of sit-down strikes before an opportunity for bargaining has been given, tend to destroy business confidence.

The effects of these methods are already being reflected in the decision of business houses to mark time until they know how these employee-employer controversies are going to end.

The Free Press believes thoroughly in the value of labor organizations, but it also believes that labor organizations should observe the same standard of honesty and fairness which they expect from employers.

Avaricious employers, who refuse to be fair to their workers, and ambitious and self-seeking labor agitators, who refuse to be fair to fair-minded employers, can make or break recovery in this country during the year upon which it has just entered.

Which will it be?—Detroit Free Press, Jan. 4.

— LETTERS —

Questions on Nema Commercial Sales Data

State Street Research & Management Corp.

140 Federal St., Boston, Mass.

Editor:

As a subscriber to AIR CONDITIONING AND REFRIGERATION NEWS, I would appreciate receiving the following information concerning the table headed "Commercial Machine Sales of 15 Manufacturers" on page 4 of the Dec. 2, 1936, issue:

1. Do condensing units items 13 to 26 inclusive, have anything to do with air-conditioning units or are they used exclusively for commercial refrigeration jobs?

2. Why is No. 8 taken in adding up the total lines and not 9, 10, 11, and 12 also?

3. Is the paper eventually going to segregate the sale of air conditioners, residential type, into some sort of a household section similar to the division of household electrical refrigerators and commercial electric refrigerators?

4. Do these air-conditioning shipments, items 8, 9, 10, 11, and 12, represent sales of air-conditioning units both commercial and residential by the majority of the large air-conditioning producing companies? The total value for October, 1936, seems so small that it does not appear representative of the entire commercial and residential air-conditioning business.

THEODORE F. DRURY.

Answer: We referred your letter to Mr. Haldeman Finnie, manager of the Refrigeration Division, National Electrical Manufacturers Association, who supplied the following answer:

"The replies to your several questions are as follows:

"(1) The condensing units shown on lines 13 to 26, inclusive, are all of the separate condensing units sold by our members and they will be used both for commercial refrigeration and for air conditioning. An attempt was made to list separately the units used for these two purposes but this was impossible because several of our members are unable to determine at time of shipment what the ultimate application of a unit will be after it has passed through the hands of a distributor and dealer.

"(2) The units on line 8 are added with others to give on line 28 the total number of condensing units shipped. Line 27 shows all separate condensing units, while lines 1, 2, 4, 6, and 8 show those which are shipped as an integral part of some complete device.

"(3) I am afraid that I do not quite understand this question, but can say that it has been decided that no change in the present statistical report will be made in 1937.

"(4) This report shows total shipments by our member companies which are listed at the head of the report published in REFRIGERATION NEWS. It should be remembered that this is primarily an association of electrical manufacturers and only the motor driven condensing units are properly included in the scope of our organization. Many of our members sell only the condensing units, leaving it to the installing dealer to purchase elsewhere the other material necessary for a complete air-conditioning installation. This means that the number of condensing units used for air conditioning and not for commercial refrigeration is considerably greater than indicated by the equipment shown on lines 9, 10, 11, and 12.

"The Air Conditioning Manufacturers Association, Southern Building, Washington, D. C., includes in its membership several of our members who are making equipment for the air-conditioning field, as well as many other concerns who do not belong to our organization because they do not make electrically driven condensing units. I have been advised that their sales statistics are circulated only to their members and are not publicized.

"Please let me know if there is any further information I can give you on this subject."

HALDEMAN FINNIE, Manager.

Balsa Wood 'K' Factor

The Balsa Wood Co., Inc.
158 Pioneer St.
Brooklyn, N. Y.

Editor:

In the Nov. 25, 1936, issue there appeared an article covering a presentation made by G. D. Wang, field engineer for Copeland Refrigeration Corp. in Milwaukee at the R.S.E.S. Convention in Memphis. This has to do with estimation of equipment for refrigerated truck bodies.

In this article Mr. Wang included a table showing the supposed thermal conductivity or "K" factor of various insulating materials. In reading over this table, we note that under Balsa Wood he shows a B.T.U. rating of .380. We do know where Mr. Wang obtained this information but is not repre-

sentative of the actual efficiency of Balsa Wood according to the U.S. Bureau of Standards which gives Balsa Wood a B.T.U. rating of .31.

While we realize that you, as a publication, are not responsible for the authenticity of such articles, we believe you can well appreciate that listing our material in this manner would naturally reflect unfavorably, particularly to anyone reading the article which would indicate of all the materials listed, Balsa Wood was the poorest insulant which in fact is not true.

Our idea is to call this to your attention primarily so that in the event any articles of similar nature are again to include a table showing insulating efficiency of various materials, you will have the correct information on Balsa Wood.

JAMES T. DOWNEY,
Vice President & Gen'l Mgr.

Refrigeration Wanted for a Plating Plant

Keeler Brass Co.
Grand Rapids, Mich.

Jan. 14, 1937.

Editor:

We are writing you to inquire about a refrigeration unit for Cyanide plating solutions. Perhaps you are not familiar with this application of refrigeration, but many plating firms now use such equipment.

Cyanide plating solutions accumulate excessive amounts of carbonate by reacting with the carbon dioxide from the air. Up to a certain point this is not objectionable but when the carbonate exceeds 6 to 8 oz. per gallon in most solutions, it serves no useful purpose and may become detrimental. Formerly such solutions were discarded but in recent years many firms have turned to refrigeration to reduce this excess of carbonate. If a Cyanide solution is cooled down below 25° F. (or preferably to 20° F.) the carbonate (Na₂CO₃) will crystallize out on the sides and bottom of the tank. The remaining solution can then be taken out and used same as a new one.

Have you ever made such equipment or do you know who does? The tank unit should lower the temperature to about 20° F. and handle around 150 gal. at a charge. Speed is not essential except as it affects the cost. Even if it required 3 or 4 days to lower the temperature from about 90° F. to 20° F., it would be no serious objection.

Hoping this gives you a clear picture of just what is wanted, and awaiting your reply.

J. M. BEK.

Correction from The Frostoff Co.

The Frostoff Co., Inc.
250 East 43rd St., New York, N. Y.
Jan. 8, 1937.

Editor:

We have this day received a copy of the Nov. 25 issue of the AIR CONDITIONING AND REFRIGERATION NEWS and we notice that on page 24 you announce that the Frostoff Co. of Iowa, manufacturers of automatic defrosting humidifying systems has leased space in the Merchandise Mart for its Chicago office.

This advertisement is somewhat misleading as we are the exclusive manufacturers of Frostoff devices and we did not appoint anyone in Chicago or have we leased office space for that purpose.

Mr. H. A. Knotts sold some of our products in Iowa and he is not a manufacturer. Will you please investigate this.

WILLIAM ILE,
President.

Dealer Asks Unit to Meet Mail Order Competition

Goldie L. Trabant
Authorized Dealer
Bicknell, Indiana

Editor:

Enclosed please find check for sum of \$3 to cover subscription for REFRIGERATION NEWS for period of one year.

One question I have in mind and will appreciate it if you help me in locating some good type of domestic refrigerator that I may sell that I may compete with mail order type competition, both in price and quality, and still maintain a fair profit with a minimum amount of service.

I realize that the above question is a pretty difficult to answer so if you can supply a number of addresses I will correspond direct with each.

GOLDIE L. TRABANT

Good Wine, Good Autos, Good Business

Ice-o-lectric
Automatic Electric Refrigerators
David Garvie
Sole Manufacturer
Mary St., Unley, So. Australia
Dec. 2, 1936

Dear Sirs:

Please find enclosed cheque on the National City Bank of New York, for \$5, being subscription to ELECTRIC REFRIGERATION NEWS.

The Refrigeration Engineers Man-

ual has not yet come to hand, in response to subscription forwarded with our letter of the 30th January last. I take it that it is now ready, and look forward to receiving it as early as possible, as well as the 1936 Specifications Book.

Perhaps it is not out of place to recall that I am probably your oldest subscriber in Australia, and have actually received practically every issue of the News.

I think from memory your publication was a little over 12 months old when we received the first copy. I immediately wrote you to send all the back numbers that you had.

It was a great pity that Mr. Taubeneck did not come to Adelaide when he was in Australia. South Australia is the headquarters of the wine industry of Australia, as well as being an important refrigeration centre, and that brandy which George "enjoyed" comes from this State.

There is no better wine in the world than Australian wine, but your government seems to have decided that the American people shall drink French wine, if they don't drink home grown.

Australia was a particularly good market for American cars and refrigerators.

We have tried your motor cars, and your Editor tried our brandy, and, I hope, some of our wine. They are both good, so why should we not do a little reciprocal trade?

DAVID GARVIE

Keeping Abreast Of the Industry

Industrial Engineering Co.
Curtis Refrigeration, Ventilation,
Air Conditioning
67 Hurlburt Ave., Akron, Ohio
Gentlemen:

Please enter our request for your new catalog of manufacturers of Refrigeration and Air Conditioning parts, and may we take this occasion to congratulate you on the progress you are making in serving the trade with the many things of interest pertaining to this industry.

Your efforts deserve your continued success, and we shall continue to be grateful for your helpful activities in keeping abreast of the growth of this rapidly developing industry.

LEE R. KANAGA,
Manager

A Motor-less, Fuel-less Refrigerator?

Louis T. Orr
1315 E. 53rd St.
Chicago

Jan. 8, 1937

Editor:

Clinton G. Rood of R. Cooper Jr. of Chicago has referred us to you.

We are desirous of obtaining full information concerning the following: Refrigerator without motor or without refillable gas, this ice box has a pedal on the outside of the box and this pedal is pressed 3 or 4 times each morning and either winds a set of springs which in turn run a compressor or it builds up an air pressure which passes over a chemical surface.

We are interested in this first for Farm use, second for trailer use, and third for marine use.

We understand that patents have been applied for and that numerous people have seen a working model.

We should like to know who the principles are in this matter and just how far their patents have been allowed.

Answer: We cannot identify the refrigerator described. We are not inclined to put much faith in the report. There is usually some rumor afloat about a mechanical refrigerator which costs practically nothing to build or to operate.

Compare the Size!

J. M. Dyer Co.
Corsicana, Tex.

New York Office: 101 West 31st St.

Editor:

We wish to register for our copy of the free Master Catalog and to thank you in advance for our copy.

We notice a lot of letters in the News about the copies of the News arriving later than they used to do.

I think if the writers of those letters will get some of their old copies which they received on Friday or Saturday and compare them with the size of the copies now, that they will agree that the difference is worth waiting for.

We do not get our copy until Monday now either but there is enough in each issue to keep one thinking until the next arrives.

LAKE A. BARBER

To Mrs. Pitsch: Skip This

Rudolf Pitsch
Electric Refrigeration
Service & Sales
724 E. Virginia, Peoria, Ill.

Dear Sirs:

Enclosed find money order for three dollars. Please renew my REFRIGERATION NEWS, as I would rather miss my wife for a week than miss your most valuable News.

RUDOLF PITSCHE.

G-E Orders During 1936 Up 37% over 1935

SCHENECTADY—Orders received by General Electric Co. during the year 1936 amounted to \$296,748,219, compared with \$217,361,587 during 1935, an increase of 37%, President Gerard Swope announced.

Orders for the quarter ended Dec. 31 amounted to \$84,857,181.

Sheffield Opens New Branch Office in Albany, Ga.

ALBANY, Ga.—C. C. Sheffield Co., Leonard distributor with main offices in Atlanta, has opened a wholesale and retail branch here.

Edward McNeill is wholesale manager of the new branch; James Bates,

assistant manager; and Clarence Newby, retail sales manager. The remodeled building which the distributorship is occupying has a modern glass front showroom. More than 11,000 persons attended the store's "opening week" festivities.

Latham Shows Leonards to New Jersey Dealers

NEWARK—E. B. Latham & Co., local Leonard distributor, presented the 1937 Leonard refrigerator to dealers at a three-day showing held Jan. 12 to 14 at the distributor's showrooms. Merchandising plans were outlined to dealers during the showing. Robert F. Downing is general manager, and William Ohman is refrigeration manager of the Latham Co.

Refrigerator Ownership By Various Income Classes Subject of Study

NEW YORK—A study dealing with refrigerator ownership by income classes and size of community, the present-day status of the replacement market, and the features in modern refrigerators that appeal to women, has just been made available by the research department of "McCall's Magazine."

These surveys were conducted under the direction of Arthur Hirose, "McCall's" Director of Research, who was formerly manager of the market analysis department of "Electrical Merchandising." The results of these studies are presented here with the permission of "McCall's Magazine."

Applying the Brookings Institution figures on income to the latest (July 1936) census estimates, it was found that the number of families in the United States is divided up at various income levels as shown by Chart 1.

Chart 1

(Number of Families With Various Incomes)

| | | |
|------------------------------|-------------------|---------|
| Over \$5,000 a year | 3,088,411 | (10.1%) |
| \$3,000 to \$5,000 | 4,709,062 | (15.4%) |
| \$2,000 to \$3,000 | 6,452,028 | (21.1%) |
| \$1,000 to \$2,000 | 12,475,959 | (40.8%) |
| 4,681,828 Families on Relief | | |
| Under \$1,000 | 3,852,870 | (12.6%) |
| Total | 30,578,330 | |

Unfortunately, there is no way of allocating the millions of families on relief. It will be noted that over 53% of American families have incomes of less than \$2,000 a year, making this market attractive numerically.

However, as will be seen by Chart 2, these 53% of the American families with incomes of less than \$2,000 a year receive only 20.5% of the total income of American families according to the Brookings Institution.

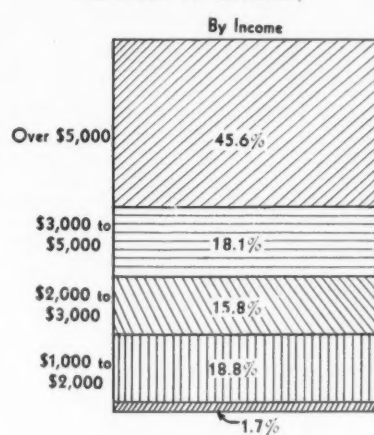
No national figures are available to show automatic refrigerator ownership by income classes. However, "McCall's" research department, by combining the Brookings Institution figures, the July, 1936, population estimate and the government studies entitled "Consumer Use of Selected Goods," has roughly allocated automatic refrigerator ownership by income classes. The percentage of families with automatic refrigerators decreases with declining income, ranging from a 69.1% saturation among families with incomes of over \$5,000 to a saturation of only 6.3% in families with income of less than \$1,000.

Using this same yardstick for rough measurement, it is apparent from Chart 3 that the largest number of families to whom no automatic refrigerators have as yet been sold are in the income group of \$1,000 to \$2,000 a year, followed by the group possessing income of \$2,000 to \$3,000 a year, followed by the families with less than \$1,000 income with the families having incomes of \$3,000 to \$5,000 next, and the families having incomes of over \$5,000 in last place when considered from the standpoint of number of homes without automatic refrigerators.

In order to get a fairly accurate picture of refrigerator ownership by income classes in a typical com-

munity "McCall's" asked Dr. H. H. Maynard of Ohio State university to conduct a survey in a typical or representative community in Ohio which

Chart 2
(How the Income of U. S. Families Is Divided)



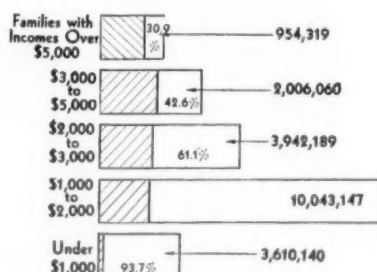
is itself considered by marketing men to be a typical state.

Dr. Maynard and his investigators—graduate and under-graduate students in the College of Business Administration at Ohio State university—conducted a survey in Logan, Ohio, calling on 1,213 homes.

Logan, Ohio, is a representative town in an agricultural and mining district with a few small factories. It is in Hocking County, has a 1930 census population of 6,080 and an estimated 1936 population of slightly

Chart 3

(Homes Without Refrigerators By Income Classes)



under 7,000. Logan is situated 20 miles from Lancaster which has a population of 18,716 and 50 miles from Columbus.

Fortunately, among Logan merchants are found those handling nine makes of electric household refrigerators, one make of gas refrigerator, and one well-known ice refrigerator.

No information on refrigeration was available from 8.2% of Logan's families; 27.3% of the families used no refrigeration whatsoever, 27.3% used ice boxes and 37.2% owned or used automatic refrigerators. It was found that 34.4% of the homes used electric refrigerators and 2.8% owned or used gas refrigerators.

Chart 4
(Refrigerator Ownership in Logan, Ohio)

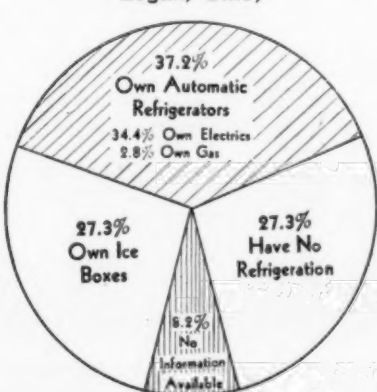


Chart 5

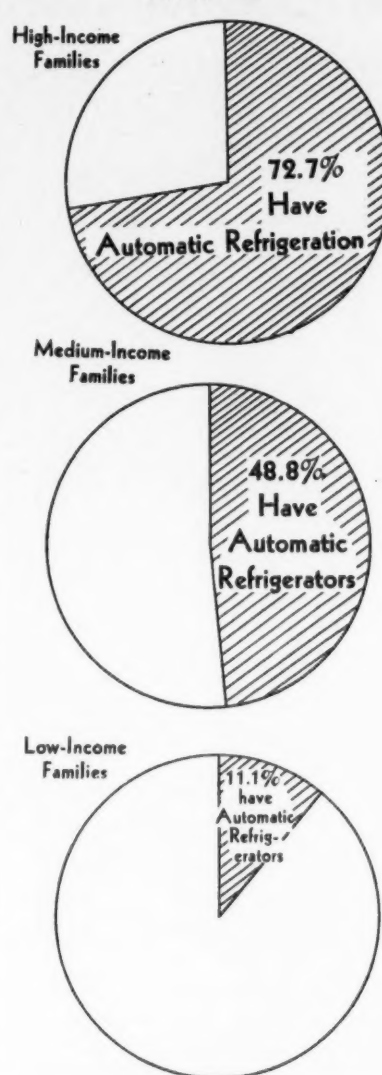


Table 1—Refrigerator Brands in Logan Homes by Economic Groups

| Brand | No. | % of Brand Families in this Class | % of Brand Families in this Owning Class | No. | % of Brand Families in this Class | % of Brand Families in this Owning Class | No. | % of Brand Families in this Class | % of Brand Families in this Owning Class | Total No. | % |
|------------------|-----------|-----------------------------------|--|------------|-----------------------------------|--|------------|-----------------------------------|--|------------|--------------|
| General Electric | 15 | 10.0 | 28.3 | 87 | 58.0 | 31.5 | 48 | 32.0 | 40.0 | 150 | 33.4 |
| Frigidaire | 7 | 10.9 | 13.2 | 41 | 64.1 | 14.8 | 16 | 25.0 | 13.3 | 64 | 14.3 |
| Leonard | 9 | 15.0 | 17.0 | 35 | 58.3 | 12.7 | 16 | 26.7 | 13.3 | 60 | 13.4 |
| Kelvinator | 4 | 8.5 | 7.5 | 31 | 66.0 | 11.2 | 12 | 25.5 | 10.0 | 47 | 10.6 |
| Westinghouse | 6 | 14.3 | 11.3 | 25 | 59.5 | 9.1 | 11 | 26.2 | 9.3 | 42 | 9.3 |
| Electrolux | 4 | 11.8 | 7.5 | 24 | 70.6 | 4.0 | 3 | 20.0 | 2.5 | 34 | 7.6 |
| Norge | 1 | 6.7 | 1.9 | 11 | 73.3 | 8.7 | 6 | 17.6 | 5.0 | 15 | 3.3 |
| Crosley | 1 | 14.2 | 1.9 | 3 | 42.9 | 1.1 | 3 | 42.9 | 2.5 | 13 | 2.9 |
| Grunow | 1 | 33.3 | 3.8 | 3 | 50.0 | 1.1 | 1 | 16.7 | .8 | 6 | 1.3 |
| Majestic | 3 | 50.0 | 5.7 | 3 | 50.0 | 1.1 | 1 | 16.7 | .8 | 6 | 1.3 |
| Gibson | 3 | 50.0 | 5.7 | 3 | 50.0 | 1.1 | 1 | 16.7 | .8 | 6 | 1.3 |
| Spartan | 1 | 100.0 | 1.9 | 1 | 100.0 | .4 | 1 | 100.0 | .8 | 1 | .2 |
| Copeland | 1 | 100.0 | 1.9 | 1 | 100.0 | .4 | 1 | 100.0 | .8 | 1 | .2 |
| Stewart-Warner | 1 | 100.0 | 1.9 | 1 | 100.0 | .4 | 1 | 100.0 | .8 | 1 | .2 |
| Servel | 1 | 100.0 | 1.9 | 1 | 100.0 | .4 | 1 | 100.0 | .8 | 1 | .2 |
| Total | 53 | 11.8 | 100.0 | 276 | 61.5 | 100.0 | 120 | 26.7 | 100.0 | 449 | 100.0 |

Working with the local Chamber of Commerce, civic authorities, the electric light and power company, the gas company and real estate men, Dr. Maynard and his investigators divided all families into three groups. One hundred and sixty-five families were found to be in the high-income group, 565 families were found to be in the medium-income group, and 474 families were found to be in the low-income group.

Since the findings of Dr. Maynard's investigators were transferred to machine tabulation cards, it was possible to discover automatic refrigerator ownership by income groups. As Chart 5 indicates, the high-income families have the highest per cent of automatic refrigerator saturation—72.7%; 48.8% of the medium-income families have automatic refrigeration, and only 11.1% of the low-income families.

Because information was asked of each Logan family as to the brand of refrigerator or ice box which it

used, it was possible to prepare Table 1 which shows automatic refrigerator brands found in Logan homes by economic group. Since the number of high-income families in Logan is smaller than the number of medium-income and low-income families, an average of only 26.7% of the leading refrigerator manufacturers' products have gone to high-income homes, as compared with 61.5% to medium-income homes and 11.8% to low-income homes in last place.

The Ohio Fuel Gas Co. which supplies gas to Logan has excellent records on its sale of Electrolux refrigerators. W. L. Reid, the local manager, made a check-up on the last 75 refrigerators sold in Logan and found that eight were bought by high-income families, 65 by middle-income families, and two by low-income families.

(Editor's Note: Part II of this study will be published in a later issue of Air Conditioning and Refrigeration News.)



PARKER PROCESSING *adds* QUALITY and Salability

Customers turn away from products showing the slightest hint of rust. Dealers lose their enthusiasm for products that show traces of corrosion.

And yet, often before they have moved off dealers' floors, often while they are still in transit, often before they have even left the shipping platform, many metal products lose salability because rust or corrosion has begun its ugly work.

Parker Rust-Proofing Processes are the dependable, accepted method of protection against this great

sales hazard. They are known to salesmen, dealers and consumers as proved protection against rust.

Manufacturers use Parker Processes because they find it Profitable to do so. Salesmen sell Parker-protected products because they close sales easier and consumers buy them because they appreciate the protection from rust.

Manufacturers may secure complete information about Parker Processes by writing direct to this company.

PARKER RUST-PROOF COMPANY, 2197 E. MILWAUKEE AVE., DETROIT, MICH.



Ask for These Books

For more than 22 years, this company has devoted its entire time, talent and energy to the improvement of rust-proofing methods. New books describing the Parker Processes are available to manufacturers and technical men. Send for your copies.

PARKER
Processes CONQUER RUST
BONDERIZING • PARKERIZING

Hungarian People Are a Blend of Oriental Characteristics and European Culture



Various Hungarian types are captured by the camera in the above pictures. Those in number 3 are having their afternoon coffee, conversation, and newspapers at a sidewalk cafe.

Editor George Taubeneck this week completes his study of Hungary, land of peasantry, poverty, and political uncertainty, and begins a discussion of mountainous Switzerland, home of bountiful electricity, with comments on Swiss coinage and the country's first manufacturer of small refrigerating machines.

Continuing his articles on Switzerland, the editor next week will detail the experiences of American firms in the country, together with background notes concerning the social, industrial, political, and cultural life of the people.

AROUND THE WORLD WITH GEORGE F. TAUBENECK

Shrunken Nation

Hungary is today just a little more than a fourth of the size it was prior to the signing of the Treaty of Trianon in 1920.

Like Austria, the other component nation of the Austro-Hungarian Empire, which dominated Central Europe in pre-war times, Hungary had to relinquish a huge proportion of both its population and its area as punishment for being on the losing side in the World War.

The present area of Hungary is approximately 36,000 square miles; before the Trianon pact it was almost 128,000 square miles. Population of the country was reduced from about 20,900,000 to a little over 8,500,000.

With the loss in land, Hungary lost much valuable mineral wealth, farm land, forests, railways, and roads. Compared to what it once was, Hungary is a poor country.

Hungary's losses in material wealth are perhaps most effectively shown by the following table. The percentage figures denote the portions taken away from Hungary by the treaty:

| | |
|-------------------------------|--------|
| Arable land | 61.4% |
| Meadows | 78.5% |
| Pastures | 73.9% |
| Vineyards | 37.5% |
| Forests | 88.0% |
| Railways | 62.1% |
| Roads | 64.5% |
| Iron Ore (annual prod.) | 83.1% |
| Copper | 100.0% |
| Gold and Silver | 100.0% |
| Black Coal | 27.2% |
| Brown Coal | 30.5% |
| Salt | 100.0% |
| Industrial Plants | 55.7% |

The land lopped off of Hungary was apportioned, in descending order, to Roumania, Czecho-Slovakia, and Yugoslavia.

Geographical Features

Physically, Hungary is the center of a great plain, sloping downward from the Austrian highlands toward the valleys of the Danube and the Tisza.

These two rivers cross the middle of Hungary from north to south and drain the heart of the country.

From the valleys, the plain ascends toward the north and northeast, culminating in the Carpathian Mountains on the border of Czecho-Slovakia. In the east, Hungary is separated from Roumania by outlying hills of the Transylvanian Alps.

Like Austria, Hungary is hemmed in on all sides by other countries, thus being blocked from open waters. North is Czecho-Slovakia; to the east is Roumania; Austria lies on the western boundary, and Yugo-Slavia shuts in the south and southwest.

On the great plains, especially near the Carpathians, the winters are very cold; but the summers are warmer than those of other western European areas lying within the same latitudes.

The climate is affected by the Gulf Stream, the Mediterranean Sea and the Eurasian plains. The Great Hungarian Plain suffers frequently from drought in summer. Late frosts are common, and there is a variance of about 30 degrees between the average summer temperature and that of winter. Average temperature for the year is around 38° F.

Rainfall, which is very irregular, averages from 15 to 24 inches annually on the plains and from 40 to 50 inches in the Carpathians.

Agrarian People

Approximately three-fifths of the people of Hungary are engaged in some form of agriculture as a means of subsistence. It is estimated that three-fourths of the total export value and almost a half of the national income of Hungary come from agriculture and its associated industries.

A third of the people engaged in agriculture are itinerant laborers with no property of their own.

Hungarian farm produce includes wheat, rye, barley, oats, maize, potatoes, sugar and fodder beets, tobacco, flax, hemp, onions, hops, peas, lentils,

cabbage, lettuce, cucumbers, tomatoes, melons, red peppers, and honey.

From the vineyards in the 17 grape-growing districts of Hungary come enough grapes to produce, in addition to thousands of bushels of edible fruit, between 55 and 75 million gallons of wine every year.

Fruit trees cultivated are the apricot, cherry, peach, apple, plum, and pear.

Animal breeding also plays an important part in the agricultural life of the country. Poultry, pigs, cattle, sheep, horses, rabbits, goats, donkeys, and mules are all of the domestic menage.

State-owned model farms have been established to demonstrate to the "smallholders" and proprietors of farms the most modern methods of operation. There is also a system of agricultural cooperative societies, organized as early as 1886, which gives information, aid and credit to member farmers, like our Granges and Farm Bureaus.

Chief agricultural fair, of which there are many, is the National Agricultural Exhibition held every March. Raw produce, livestock, and the prod-

ucts of the Hungarian agricultural machine industry are put on display to a merry-making crowd of peasants and landowners.

Other industries worthy of note include iron and steel, machinery and tools, leather, building materials, chemical products and related businesses, preserves, clay and porcelain, glass, woodwork, furniture, paper, coal mining, chocolate and sweetmeats, and salami. The latter is a Hungarian specialty, exported to many nations.

Leather goods, preserves, and glue also are exported in considerable quantities.

Each year there are several commercial and industrial exhibitions, the most noteworthy being the Budapest International Fair, which celebrated its silver anniversary in 1930. It is held every spring under the auspices of the Chamber of Commerce.

Government

Hungary is a kingdom without a king. It is classed as a constitutional monarchy, but there is no monarch, nor has there been one since Charles IV relinquished his claim to the throne and went abroad in 1918.

In the absence of a king, the Crown is represented by a Regent, whose powers are less extensive than those of a real royal ruler of Hungary.

Principal parties are Hapsburg and anti-Hapsburg. Under the reign of the Hapsburgs the Hungarians did well, culminating in the grandly prosperous first decade of the twentieth century.

Just as we in America are likely to identify booms and depressions with presidents, so do the Hungarians connect their past prosperity with the Hapsburgs.

Czechoslovakia and Yugoslavia, however, will not allow a Hapsburg to ascend the vacant throne at Budapest. They fear that their peoples will want to rejoin Hungary if a Hapsburg king—in whom Slavs of all nations would have confidence—were permitted to resume power.

Next in rank to the Regent is the Minister President, whose functions are similar to those of the Prime Minister of England or the Premier of France. Advising both the Minister President and the Regent is a ministry known as the Royal Hungarian Cabinet.

The members of this body, though appointed by the Regent, are selected pro rata in accordance with the political composition (number of seats per party) of the legislature. At present there are nine men in the Cabinet.

Hungary's parliament is a bicameral assembly made up of the House of Commons, whose members are elected by the voting citizenry at large, and the Upper House, the members of which receive their positions either by dignity of office, by election, or by ap-

pointment of the Regent with the Cabinet's recommendation.

Budapest is the seat of government.

Membership in the House of Commons totals 245; that in the Upper House is 250. Draft bills are debated first in the lower house, then in the Upper, and if accepted by both are signed and promulgated by the Regent.

Each of the 14 counties of the nation has its own local administration, headed by a Lord Lieutenant appointed by the Regent. There are also large and small communities with their own municipal administrations.

Hungary has a judicial system which ranges upward from district courts to the Supreme Court of Justice. Between these are the courts of appeal.

During trials the Crown, or State, is represented by a Royal Prosecutor, whose title varies in each type of court. In the district courts he is the public prosecutor; in courts of appeal he is the chief prosecutor, and in the Supreme Court he is the Crown Prosecutor.

Population and the People

According to the official census of 1930, the population of Hungary stands at 8,683,740, and "stands" is said to be the proper word, for it has varied little since. Population averages 93 persons per square kilometer, or about 240 per square mile. If Detroit and Chicago were suddenly to pour their inhabitants into Indiana, you'd have an equivalent density of population.

Native Hungarians are descendants of the Magyar tribe that roamed Western Europe and Eastern Asia some eleven hundred years ago. They are more Asiatic than European in physical characteristics and in temperament.

Nine-tenths of the people living in Hungary at the present time are of the Magyar race, the other tenth being made up of Germans, Slovaks, and strains of a few other races indigenous to Central Europe.

The Hungarian language is spoken by 96.8% of the residents of the country.

In the worship of God, 64% are of the Roman Catholic faith, 21% are Calvinists, 6% are Israelites, 6% are Lutherans, and the rest Greek, Greek Oriental, Unitarian, and other creeds.

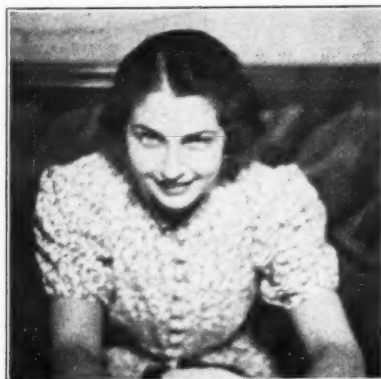
Education

Education is compulsory and free between the ages of six and 12. These six years are spent in a primary school, and from there the student is eligible to go to a vocational training school or to a secondary school.

Primary schools are maintained by the State, by municipalities or communities, by parishes, and by private interests.

(Concluded on Page 13, Column 1)

Dark Eyes



Here is one good reason why men long to return to Budapest.

ucts of the Hungarian agricultural machine industry are put on display to a merry-making crowd of peasants and landowners.

Industry

Although over half of its factories went, along with the land, to other nations, Hungary has further developed those manufacturing enterprises which were left, and today has a fair industrial development.

The textile industry is perhaps the most important, outside of those enterprises linked directly with agriculture. Of the latter, milling is the greatest, for the wheat produced on the great plains makes excellent flour.

More than a dozen concerns are engaged in the production of sugar, principally from beets. Industrial dis-

Budapest at Night Is Gaye than Paris, Lovely Beyond Comparison



1. Danube by night. 2. Believe it or not, this is the interior of a Budapest night club. It is designed to resemble a street in Marseilles. 3. and 4. Dancers in a Budapest club. Hungarians take to dancing as naturally and gracefully as they do to music; and some of Europe's finest cafe entertainers come out of this land. 5. Corner of a cafe in Budapest.

Old Women Supplant Newsboys in Budapest; Trade Restrictions Help Hungarian Poor



1. "This is my corner—quit your chiseling," cries the newspaper seller on the right. 2. Hungarians are skilled woodworkers and cabinet makers. Here are two with the products of their hands slung over their shoulders. 3. Time marches on. 4. Waiting for a street car; two housewives, a cane peddler, a near-sighted student. 5. No newsboys do you see in Budapest. Women sell all the periodicals, operating on the sidewalks with racks of newspapers, magazines, and cheap paper-bound fiction.

(Concluded from Page 12, Column 5)

Besides the regular academic schools, there are a number of independent agricultural training schools in the larger villages of the country, where farmers' children have the opportunity to learn modern methods of farming.

University of Budapest is the largest institution of higher learning in Hungary. The University of Szeged, the University of Debrecen, the University of Pecs, and the Technical University, or College of Engineering, augment the list of degree-granting institutions.

There are also various other types of schools, chief of which are the Veterinary University in Budapest, the Mining and Forest-Engineering High School at Sopron, the National Musical Academy in Budapest, the Academy of Theatrical Art. Also in the capital city are the High School of Fine Arts, the School of Applied Arts, a number of Medieval Pedagogic Institutes, and several other agricultural schools.

Public education outside the schools takes the form of organized "courses," including series of lectures, theoretical and practical educational courses, singing, music and amateur theatrical training, etc. In addition, there have been established since 1927 four types of public libraries in 1529 villages.

Brief Moments

On November 16, 1918, Hungary was declared a Democratic Republic. This form of government did not last a year, for in 1919 a Communist rebellion broke out, and from March 21 to July 31 there was a reign of Bolshevik terror.

A counter-revolution in August of that year quelled the disturbance, and restored constitutional order and the monarchic principle. Exactly one year to the day from the creation of the Hungarian republic, Commander-in-Chief Nicholas Horthy marched into Budapest at the head of his troops and assumed control over the government.

The following March 1, Horthy was elected Regent to represent the Crown in the absence of a king. On June 4, 1920, the Treaty of Trianon was signed, and Hungary submitted to the dispossession of more than two-thirds of her territory.

Count Stephen Bethlen became prime minister on April 14, 1921, and the revival of Hungary was begun in earnest.

In 1922 Hungary became a member of the League of Nations. From that time, on the history of the country has been, not one of unusual events and

stirring experiences, but of steady progress. On August 19, 1931, Count Julius Karolyi became prime minister. Probably the topic of most interest in the post-war history of Hungary is the question of whether or not a king will ever occupy the now vacant throne.

The fact that the idea of a kingdom—although empty—has been maintained, and that the Crown is still recognized as the official head of the government, would seem to indicate that Hungarians expect someday to restore the monarchy.

Whether or not their neighbors will let them dust off the crown for a new head is another story.

Cooperatives

Hungary's cooperative movement got underway much as did Sweden's, with the formation of an agricultural credit association. Count Sando Karolyi was the leading spirit in this organization, and later laid the foundations for the country's first cooperative stores.

Eventually local farm credit unions had expanded into the National Central Credit Association (Országos Kozponti Hitelszövetkezet) which regulated credit requirements of its subsidiaries and financed other cooperative ventures. Today it remains as the banking medium for Hungary's cooperative societies, and audits accounts for all credit association including non-members.

Latest figures show that there are more than a thousand local cooperative unions in the country, besides six district credit associations whose function is to cover the credit requirements of medium-sized and large estates.

The central society makes credit facilities available to local associations requiring financial backing in proportion to their share capital. Recently, besides issuing bonds, it has assumed power to grant long-term loans to farmers in addition to advancing medium-term personal and working credits. The Hungarian government has given the national association extensive support.

Other prominent credit associations for special purposes, partly supported by state subsidy, are the Cooperative Co. for Financial Settlement under the Land Reform Act, the Cooperative Co. for Building Village Dwelling Houses, and three cooperative land credit institutes: the Hungarian Land Credit, National Land Credit for small landholders, and the strangely-named Altruist Bank.

"Hangya," the administrative center and wholesale buying organization of

the agricultural cooperatives, had 850,000 members in 1929. Most of its members are farmers and farm hands. Producing departments are united in the Hangya Industrial Co., Ltd.

Working independently of the Hangya in the cooperative movement are the Hungarian Public Servants' Consumption, Production and Sales Association (Magyar Koztisztsvelok Fogyasztsi Termelo-es Ertekesito Szovetkeze), the General Cooperative Society of Industrial Workers, and the Cooperative Stores and Savings Association of the Hungarian State Railways.

As in Sweden, the cooperatives have entered various manufacturing fields.

The National Hungarian Cooperative Dairy Central is backed by state support. Members of this association must deliver milk at wholesale prices prescribed by the union according to whether it is sold as fluid milk or as a milk product.

Marketing of eggs and poultry has been developed under the wing of a cooperative. The Hungarian Mutual Cattle Insurance Co. is the central bureau of the cooperative cattle insurance societies. A small percentage of this business goes to the Farmers Insurance Society, whose principal underwriting is done in the life, fire, and "act of God" field.

Four cooperatives have been formed to handle the cooperative wine trade. These function in four districts where the kind of wine handled by each is most popular. The "Fructus" Society has 268 subordinate cooperatives under its wing in the wine business.

Agricultural produce is sold by the Hungarian Farmers Association, while the supply of materials and credit to industrial artisans is supervised by an Artisans Central Credit Association. Grain sales are handled by Futura, Ltd., which employs credit and consumer societies as agencies.

Peasant Life

When traveling through Hungary, my eye was caught by the mud huts of the peasants which, in the arid landscape, were reminiscent of those in India and Egypt.

Some, however, held up proud heads in the form of arched porches, white-washed and clean, with large fireplace chimneys at the rear.

Roofs are thatched of material obtained from the fields. The home-carved doors, eaves, gables, and fences are manifestations of the artistic spirit which smolders in all true Magyars, but which seldom breaks out into the white flame of genius.

In addition to the huge, open fire-

places, these homes are heated by terraced bee-hive stoves, which use pressed straw as fuel for both cooking and comforting.

In the Transdanubian sections, stone is the universal building material. Houses, barns, outhouses, fences, everything is built of vaulted stonework. Huge open fireplaces (vented to the courtyard) and molded plaster facades feature these homes.

Along the shores of Lake Balaton the traveler finds both stone and wooden construction. The carved gates and fences in this region are particularly artistic—and frequently highly original.

Wherever possible, the peasant artists have painted flower bouquets on exposed flat surfaces.

Among the Magyar women the artistic urge finds expression in embroidery. Intricate and inventive patterns, especially on pillows, bedclothing, and shirtwaists. Headdresses are colorfully ornamented, too.

While their fraus are embroidering flowers and birds upon their coarsely-woven textiles, the peasant men like to potter around with ceramics. Conventional dishes and tableware, ornamented with invariable too-brightly-colored-to-be-natural posies, are their specialties.

In the shops you'll find other Magyar handicraft like ornamented leather, horns, plastics, and clever examples of the furrier's art.

To see Magyar clothing at its best—in the full glory of its rich embroidery, skilfully cut leather garments, and magnificently daring color combinations—one must attend a peasant wedding, national holiday, or church festival.

Unfortunately, my luck did not extend that far.

SWITZERLAND

Swiss Coinage

The Swiss franc, monetary unit of the Alpine country, has a par value of \$0.3267 and is divided into 100 centimes. Gold coins are unlimited legal tender; silver coins are legal tender up to 100 francs; nickel coins up to 10 francs; and bronze coins up to two francs. Swiss National Bank and all federal public offices are required by law to accept any amount of the bank's notes at any time at face value.

Period for which the Swiss National Bank is to have exclusive right to issue bank notes has been extended to 1947. The bank's policies are influenced by the government through the appointive power.

Gold coverage of the Swiss cur-

rency must amount to at least 40% of the value of the notes in circulation and must be kept within the country. Silver may not be included in the currency reserves and is used only for subsidiary coinage.

Autofrigor

Established in 1909 as a department of Escher Wyss & Co., the Autofrigor A.-G., the first manufacturer of small refrigeration units in Switzerland, soon spread its wings to become a separate concern, and expanded its activities until now the firm has factories in Germany, Paris, and Zurich, and has agents in most European countries.

Dr. R. Zoelly directs the Autofrigor A.-G. Zurich factory; that in Lindau on Lake Constance, Germany, is under the directorship of Dr. M. Metzenthin, and the Paris branch of the concern is managed by Dr. G. Champendal and Dr. L. de Weck.

First refrigeration unit built by the company in 1909 was provided with direct electric drive, reciprocating compressors, and a shaft sealed with a gland. Chiefly because of the gland on the shaft, and because of the decomposition of the refrigerant (ethyl chloride and later methyl chloride were used), these early units did not prove entirely satisfactory, company engineers report.

The new unit which was then manufactured was designed so that the use of a gland on the shaft seal was eliminated, since it was found that with a gland-sealed shaft in the unit, water caused the decomposition of the refrigerant and the corrosion and resinification of the oil in the unit parts.

Characteristic feature of the Autofrigor, introduced for the first time at the Swiss Exhibition in Bern in 1914, is the inner casing of metal which is arranged between the rotor and stator of the electric driving motor. Welded connections eliminate the use of piping in the unit.

By means of special processes and equipment, the refrigerant and lubricating oil are rendered anhydrous and the unit is kept water free to a considerable extent, its manufacturers claim.

Seeking to introduce an inexpensive refrigeration unit, Autofrigor A.-G. next added Frigomatic refrigerating units to its line.

This unit has a reciprocating compressor driven by an electric motor. It is provided with a gland for sealing the shaft, and can be operated with most of the commonly known refrigerants. Thermo-regulating devices are used in both types of refrigerators manufactured by this company.

By Daylight Budapest Is a Grown-Up Country Town—Every Day Is Market Day



1. Trees line most of the streets of Budapest. 2. Market scene on a rainy day. 3. Horse-drawn conveyances are more common than taxicabs. 4. Human beasts of burden. Even though Hungary is proud of its blooded horses, manpower is sometimes found cheaper for drawing light loads.

— BUYER'S GUIDE —

SUPPLIERS WHO SPECIALIZE IN SERVICE TO THE INDUSTRY

*No product can be better
than the men behind it.*

The men behind Peerless Products are acknowledged leaders in their field. They constantly strive for an ideal—"PERFECTION"—are never satisfied with anything short of that. It is because of this that Peerless Products are superior—as good as the men behind them.



Twenty-Five Years
in the Refrigeration
Industry

PEERLESS of AMERICA, Inc.
ESTABLISHED IN 1912 AS THE PEERLESS ICE MACHINE COMPANY

NEW YORK
43-20 34th St., Long Island City

CHICAGO
515 West 35th St.

LOS ANGELES
3000 South Main St.

The KOCH ECON-O-CASE
The Newest KOCH PRODUCT

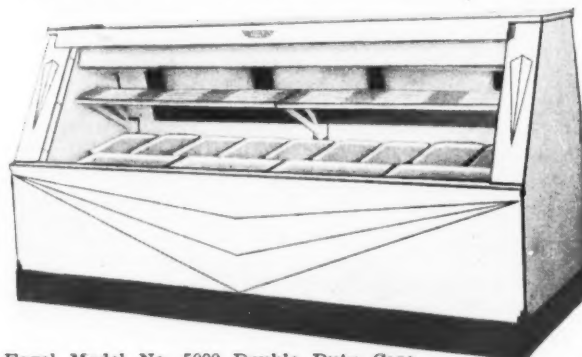
COCKBOARD INSULATION
ALL-STEEL CONSTRUCTION
Built for SERVICE Priced to SELL
TRIPLE GLAZING-RUBBER DOORS
DOUBLE DUTY-6, 8 and 10 ft. LONG

In addition to standard products, Koch now offers the Econ-O-Case, selling at the very lowest price level, and worthy of the Koch name in every respect. This new display case, sold only through distributors, opens a vast new market for Koch equipment. Write for details.

KOCH REFRIGERATORS
North Kansas City, Missouri

Economical IN COST Economical IN OPERATION
WRITE TODAY FOR PROPOSITION

**FOGEL OFFERS A COMPLETE LINE
To Commercial Refrigeration Distributors**
INCREASE YOUR CASE AND COOLER PROFITS FOR 1937

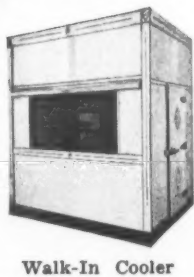


Fogel Model No. 5000 Double Duty Case
Fogel Franchise is Valuable
Write For Details Today

Fogel Refrigerator Company
Philadelphia, Pa.

Manufacturers of Complete Market
Equipment Since 1899

Factory
Help
Enables
You to
Become
Leaders
In Your
Territory



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Refrigeration Instruments by Marsh

"The Standard of Accuracy"

Time plays no favorites. That's why it pays to use refrigeration instruments that are built to "take it" year in and year out. Marsh Refrigeration Gauges are available in all types for all applications including:

Sulphur Dioxide Freon
Carbon Dioxide Ammonia
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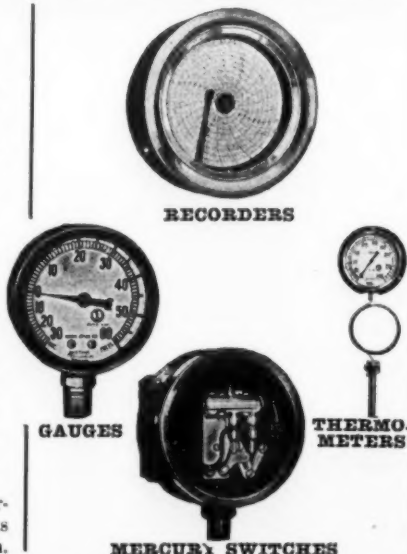
Marsh dial thermometers, in all types, and Marsh Recorders are also known for their rugged construction and lasting accuracy. Ask for facts about the Marsh re-calibration adjustment—an exclusive feature of Marsh Gauges and Thermometers.

A member of the Refrigeration
Supplies and Parts
Manufacturing Association.

WRITE
FOR NEW
REFRIGERATION
CATALOG

JAS. P. MARSH CORPORATION

2067 SOUTHPORT AVENUE, CHICAGO



QUESTIONS

Room Coolers for Java

No. 3004 (Dealer, Java, Dutch East Indies)—"We would appreciate it very much if you would send us a sample copy of your magazine, and also a list of the manufacturers who carry room coolers."

Answer: Most recent information concerning the construction, design and capacities of various room coolers can be found in the July 29, 1936 issue of REFRIGERATION NEWS, in which were published specifications of all leading makes of air-conditioning equipment. Copies of this issue are available at a cost of 25 cents each.

Anyone Know 'Minra'?

No. 3005 (Reader, California)—"I understand that there is a product by the name of 'Minra' which acts quickly in offsetting the effects of breathing sulphur dioxide."

"If possible, will you kindly tell me where I can obtain a jar of this product."

Answer: We do not know. Can any reader supply this information?

Rust Hills' Booklet

No. 3006 (Utility, Michigan)—"In the 'Sales Method Column' of the Dec. 23 issue of the REFRIGERATION NEWS, I read about the booklet by Rust Hills. I am interested in securing one of these booklets and am wondering if you could advise me where I may purchase it."

Answer: See below.

No. 3007 (Utility, New York)—"On page nine of your Dec. 23 issue of REFRIGERATION NEWS, we read with considerable interest about a new booklet entitled 'Gives Consumer Tips on Appliances and Promotes Service Business' by Rust Hills."

"We would appreciate it very much if you could supply us with a copy or the address of the author from whom we may receive one."

Answer: Address Rust Hills, the author, at 441 Ocean Ave., Brooklyn, N. Y.

Undabar Manufacturer

No. 3008 (Distributor, North Carolina)—"Kindly furnish us with the name and address of the manufacturers of Undabar."

Answer: Undabar electric beverage and food coolers are manufactured by the General Import Co., 220 North Fourth St., St. Louis.

Kerosene Refrigerators

No. 3009 (Dealer, Kentucky)—"Would you be good enough to advise us the various manufacturers of kerosene refrigerators?"

"We are anxious to get a franchise on a kerosene job, as the market around this section is good for them."

Answer: Kerosene-operated refrigerators are manufactured by the following manufacturers:

Crosley Radio Corp.
Cincinnati, Ohio
Allyne Refrigerator Corp.
c/o Cleveland Tractor Corp.
East 193rd St., Cleveland, Ohio
Gibson Electric Refrigerator Corp.
Greenville, Mich.
Perfection Stove Co.
7609 Platt Ave., Cleveland, Ohio
Servel, Inc.
Evansville, Ind.

Counter Freezer Makers

No. 3010 (Reader, Ontario, Canada)—"Would appreciate it very much if you would send me, soon as possible, names and addresses of firms in the United States, manufacturing ice cream counter freezers."

"I am interested in buying one and want to get the agency in Ontario for a good machine."

Answer: Names and addresses of manufacturers of ice cream counter freezers are as follows:

Mills Novelty Co.
4100 Fullerton Ave., Chicago, Ill.
Russ Soda Fountain Co.
5700 Walworth Ave., Cleveland, Ohio
Sherer-Gillett Co.
Kalamazoo Ave., Marshall, Mich.
Super-Cold Corp.
1020 E. 59th St., Los Angeles, Calif.
Taylor Freezer Corp.
Beloit, Wis.
Tuthill Pump Co.
132 W. 63rd St., Chicago, Ill.

Cold-Spot Parts

No. 3011 (Dealer, New Jersey)—"Will you kindly advise us where to obtain parts for Cold-Spot refrigerator compressors. We have written to Sunbeam Electric Ftg. Co., Evansville, Ind., who manufacture for Sears Roebuck & Co. and they have advised

that they restricted themselves to doing business with that firm."

Answer: Try the Perfection Refrigeration Parts Co., Harvey, Ill., for Cold-Spot parts.

Silica Gel Dryer

No. 3012 (Manufacturer, Pennsylvania)—"We are using Silica Gel to dry the air pocketed between glasses on display cases with multiple glass fronts. We would appreciate learning from you, the names of material suitable for this purpose, and the names of manufacturers of Silica Gel."

Answer: Source of supply for Silica Gel is the Silica Gel Corp., Baltimore Trust Bldg., Baltimore, Md.

Efficiency Kitchens

No. 3013 (Dealer, Arkansas)—"Please advise us the name of the companies where we might secure complete information concerning complete efficiency kitchens."

Answer: Write National Kitchen Modernizing Bureau, 420 Lexington Ave., New York City.

REFRIGERATION SUPPLY JOBBER ACTIVITIES

Davenport Jobber Sponsors Program of Technical Talks For Servicemen and Dealers

DAVENPORT, Iowa—Educational talks on technical refrigeration subjects, given by manufacturers' engineers and representatives, is part of the program of cooperation for servicemen and dealers sponsored by the Republic Electric Co., parts jobber here.

The talks are given in the Republic Electric Co.'s convention hall, which is available for meetings by local servicemen and refrigeration engineer groups.

Republic Electric Co. was founded in 1916, and is operated by J. S. Kimmel. E. L. Bengston heads up the refrigeration supply department. He has been in the refrigeration parts business since 1921, having been employed as parts manager from 1921 to 1932 for Electric Equipment Corp., Frigidaire distributorship which was operated by Mr. Kimmel.

The company is a member of the National Refrigeration Supply Jobbers Association.

Airo Supply Opens Eastern Branch in New York

NEW YORK CITY—To provide increased service facilities for its eastern trade, the Airo Supply Co. of Chicago has opened a New York branch store and warehouse at 17 W. 60th St. at Broadway.

Under the management of W. B. Williams, the store will carry a complete line of parts, tools, and supplies for all types of refrigeration and air-conditioning equipment.

More than 100 service men from the New York City metropolitan area attended the party held on Dec. 8 to celebrate the formal opening of the new store.

General management of the Airo Supply Co. will be continued from the organization's home office in Chicago.

Promotion Map Shows Location Of New Melchior Branch

NEWARK—In connection with the opening of a new unit and warehouse at 859 Bergen St., Melchior, Armstrong, Dessau Co., jobbers of refrigeration, heating, and air-conditioning supplies, is distributing a map to dealers and service men in the territory, showing the location of the office and the highways leading to it.

Establishment of the Newark branch brings to eight the number of Melco units in the eastern territory. Other offices of the organization are located in New York City, Brooklyn, Rochester, Boston, Philadelphia, Harrisburg, Pa., and Baltimore.

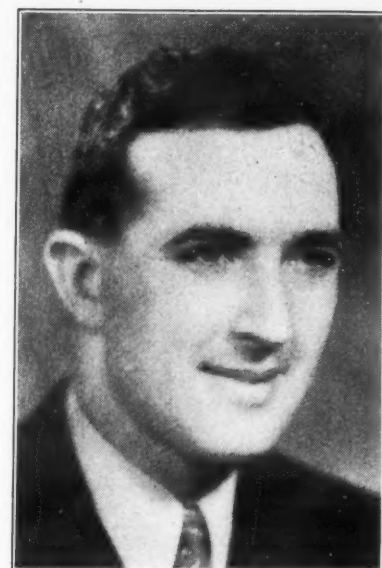
Pratt's Christmas Tree Project Reaches New Heights

SAN FRANCISCO—Well-known among the trade as a pioneer jobber of refrigeration parts, and as an arbiter of used refrigerator prices, Clarence F. (Sandy) Pratt, president of the California Refrigerator Co., has also achieved considerable recognition for his civic enterprise, particularly his work as founder and leader of the Outdoor Christmas Tree Association of California movement.

Object of this enterprise, started 10 years ago, was to realize "an outdoor Christmas tree for every California home." This past Christmas the association realized its greatest triumph—there were over 100,000 lighted outdoor Christmas trees in California. The city of Fresno won recognition by having the longest lane of lighted trees in the world—1½ miles.

Mr. Pratt is also active member of the National Refrigeration Supply Jobbers Association.

Plans for Jobber Group



ROBERT H. SPANGLER

Jobber Association Heads Plan Large Program

DETROIT—Robert H. Spangler of the R. H. Spangler Co., St. Louis, president of the National Refrigeration Supply Jobbers Association, visited the executive offices of the Association here last week to confer with Frank J. Gleason, executive secretary, on outlining plans and policies for the coming year, and to arrange for meetings of the Association's board of directors.

According to Mr. Spangler, a much enlarged and more comprehensive program is planned by the Association for 1937 than in 1936, in view of an expansion in membership which the officers expect to be realized, and the anticipated increase in business.

It is said that refrigeration supply jobbers did a total business of around \$7,000,000 in 1936, and a sizable increase is looked for this year.

While in Detroit Mr. Spangler spent considerable time in conference with J. D. Colyer of the Wolverine Tube Co., president of the Refrigeration Supplies and Parts Manufacturers Association, discussing matters of mutual interest.

Borg-Warner Enters Winter Air-Conditioning Parts Field

CHICAGO—Twenty-five thousand copies of Borg-Warner Service Parts Co.'s new 88-page automatic heating and winter air-conditioning catalog have been distributed to dealers, contractors, and service organizations throughout the country, Ray P. Johnson, manager of the refrigeration and automatic heating department, has announced.

Entry into the heating and air-conditioning supplies field marks a new service for the Borg-Warner subsidiary, which came into the refrigeration parts jobbing business a little more than a year ago.

New Jobbing Firm Established In Louisville, Ky.

LOUISVILLE, Ky.—A new refrigeration supplies jobbing firm, known as the S. W. H. Supply Co., has opened for business at 131 South Third St. here. S. I. Slomo, formerly with Perfection Refrigeration Parts Co., and W. C. Hutchinson are now associated with the company.

CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

SALES REPRESENTATIVE to establish and develop commercial refrigeration dealers in the states of Ohio and New York. To be given consideration, application must give full particulars regarding experience and references which will be held confidential. These two openings offer a splendid opportunity with a manufacturer already established nationally but interested in further dealer development in this territory. Box 888, Air Conditioning and Refrigeration News.

EXCEPTIONAL OPPORTUNITY as district sales representative with nationally known coil manufacturer. Consideration will be given men with experience in contacting jobbers and distributors of electric refrigeration. We have openings for several capable men who know the commercial business thoroughly. Must be able to sell, teach men how to sell, organize and manage territories and make them produce. Applicants must be located in any of the following territories: Los Angeles, San Francisco, Seattle, and Portland. Compensation: salary, expenses and bonus. Full particulars regarding experience and references must be given in first letter which will be held strictly confidential. Box 889, Air Conditioning and Refrigeration News.

DRAFTSMAN—experienced on refrigerator cabinet construction and design. Should be familiar with die-stamping, metal work and allied wood construction. Good opportunity with progressive new firm in large eastern city. State fully: experience, salary expected, and personal qualifications. Box 890, Air Conditioning and Refrigeration News.

ASSISTANT SUPERINTENDENT—for modern, new refrigerator factory in East, manufacturing ice equipment, including domestic and commercial refrigerators, water coolers, beverage chests, etc. Should be thoroughly experienced with steel construction, stamping presses, spot welding, metal assembly, etc. Prefer man with experience in wage incentive and bonus plans, in assembly line production. Give complete personal qualifications, experience, and salary desired. Box 891, Air Conditioning and Refrigeration News.

FRANCHISE AVAILABLE

PATENTED EVAPORATING REFRIGERATOR—United States rights to manufacture and sell water cooled refrigerators. Designed for greater evaporation and lower internal temperature. Made of special earthenware. Water only maintenance. Small space required, 90% utilized. Desir-

able camps, yachts, farms, aircraft. Particulars, write UNI-CUT AND NET, 56 West 45th Street, New York.

BUSINESS OPPORTUNITY

FOR SALE—Refrigeration service and electrical appliance sales business established eight years. Service department now operating three cars supports business. Automobiles, floor stock, including new refrigerators, washers, ironers, furnaces, small appliances, refrigeration parts and supplies, office equipment and corporate name, in full price of \$6,000.00. Lease does not expire for two years—renewable. Located in one of California's largest and liveliest cities. Sale forced account other immediate interests. Box 887, Air Conditioning and Refrigeration News.

REPAIR SERVICE

MAJESTIC HERMETIC UNITS repaired and exchanged at \$18.50 f.o.b. our factory Chicago. Every unit undergoes complete tests for temperature, cycling, wattage consumption, and quietness on genuine Majestic test equipment from the Grigsby-Grunow plant. Six months' factory guarantee. **REFRIGERATION MAINTENANCE CORP.**, 365 E. Illinois St., Chicago, Ill.

MAJESTIC & GRIGSBY GRUNOW refrigerator and radio parts service. The only original and genuine factory parts and service anywhere in the country. All of our replacements and parts carry our unconditional guarantee backed by this reputable organization. Beware of inferior replacements and parts. **G. & G. CO.**, 5801 Dickens Ave., Chicago.

MAJESTICS EXCHANGED or rebuilt \$18.50. Genuine Majestic repair and test equipment and parts used throughout. General Electric household units rebuilt \$25. Prices f.o.b. Chicago. Six months' guarantee. Complete Majestic parts price list on request. **REFRIGERATION PRODUCTS, INC.**, 122 West Illinois St., Chicago, Illinois.

GENERAL ELECTRIC and Majestic hermetically sealed units repaired and exchanged. Guaranteed work. Wholesale only. Give model when writing. All prices quoted f.o.b. Chicago. **AMERICAN REFRIGERATING ENGINEERS, INC.**, 2257 Silvertown Drive, Chicago, Illinois.

SCHOOLS

REFRIGERATION AND AIR CONDITIONING is easiest to understand and explain when we have a clear understanding of the fundamentals. Our extension course is especially practical for executives and service men in refrigeration and air conditioning who lack the technical training. **DETROIT SCHOOL OF REFRIGERATION AND AIR CONDITIONING**, 4125 Grand River, Detroit, Mich.

ARTIFICIAL FOOD DISPLAYS

ARTIFICIAL FOOD DISPLAYS at prices you can afford to pay. A realistic food set of meats, fruits and vegetables for every make refrigerator. Complete sets from \$3.00 to \$6.00. Write your source of refrigerator supply or direct to **CINCINNATI DOLL CO.**, 311-313 E. Twelfth St., Cincinnati, Ohio.

Air Distribution in Domestic Hot Air Heating Systems

(Concluded from Page 15, Column 3) tends to hold the warm air down in the occupancy zone.

However, introducing the air at such low levels necessitates the use of very low entrance velocities in order to avoid disagreeable draughts, so that the warm air merely flows upward to the ceiling. This arrangement necessitates the placing of a cold air or recirculating register in each room at the outside wall, in order to draw the warm air down and induce it to spread over the room.

While this method is quite satisfactory for heating service, it is very unsatisfactory when the duct system is used for distributing chilled air during the cooling season, as the cool heavy air flows into the room near the floor at low velocity to remain at low levels, forming a cold knee-deep pool upon the floor and leaving a warm zone above.

In another method of air introduction, one which seems to be growing in favor, the air is supplied from wall regulators, located over-head near the ceiling so that much higher entrance velocities may be used without creating draughts within the occupancy zone.

By the use of these higher entrance air velocities, the warm air may be distributed over the room without the use of cold air registers at the outside walls, and will be driven down into the occupancy zone, rather than being allowed to stratify at the ceiling.

The overhead method of distribution is much more satisfactory during the cooling season, as the higher velocities which be used without drafts under this method of air introduction, temper the chilled air by mixing it with air at room temperature and distribute it over the entire room before it loses its velocity and settles down.

With the overhead method of air introduction, the cold air register may be located at the floor in an inside

partition, or may be omitted and air allowed to escape from the room through louvered doors or under the doors (provided that a sufficient crack is provided, or about 1/4 inch for the average residential room) to a corridor or hallway where a cold air register may be provided for several rooms. Obviously, considerable savings in cold air duct and register cost may be effected in this way.

Supply grilles must be carefully located so that there will be a positive flow of air to the more exposed walls and windows, and so that there is a good circulation of air over the entire room. The use of "directional" type grilles is of considerable assistance in obtaining directional control and distribution of air.

Generally, one supply grille per room will suffice, except in cases where the room is too long and narrow to be swept by one directional grille discharging at 45° to its face.

Fig. 56 shows a typical method of introducing air into the room. With this method, a cold air register or grille must be provided at an outside wall of each room.

Fig. 57 shows a typical method of introducing air into a room. With this method, one cold air register in a hallway may be used to serve several rooms.

PATENTS

Issued Dec. 15, 1936

2,063,921. **AIR COOLER**. Briscoe B. Gray, Washington, D. C. Application Aug. 15, 1935, Serial No. 36,330. 7 Claims. (Cl. 261-29) (Granted under the act of March 3, 1933, as amended April 30, 1928; 370 O. G. 757)

2,063,960. **REFRIGERATING APPARATUS**. Harry F. Smith, Dayton, assignor, by mesne assignments, to General Motors Corp. Application June 23, 1930, Serial No. 463,085. 16 Claims. (Cl. 183-120)

2,063,988. **REFRIGERATING APPARATUS**. Herman J. Dick, Dayton, assignor to General Motors Corp., Dayton. Application July 31, 1934, Serial No. 737,782. Renewed Oct. 8, 1935. 5 Claims. (Cl. 257-252)

2,064,009. **REFRIGERATING APPARATUS**. Harry B. Hull, Dayton, assignor to General Motors Corp., Dayton. Application Feb. 27, 1934, Serial No. 713,195. 18 Claims. (Cl. 62-116)

2,064,010. **REFRIGERATING APPARATUS**. Harry B. Hull, Dayton, assignor to General Motors Corp., Dayton. Application May 25, 1934, Serial No. 727,542. 13 Claims. (Cl. 62-4)

2,064,036. **METHOD OF MAKING A CONDENSER**. Ray A. Sandberg, Waukegan, Ill., assignor to Oakes Products Corp., North Chicago, Ill. Application Aug. 12, 1935, Serial No. 35,765. 2 Claims. (Cl. 113-118)

2,064,040. **REFRIGERATING APPARATUS**. Harry F. Smith, Dayton, assignor, by mesne assignments, to General Motors Corp. Application May 21, 1931, Serial No. 538,947. 10 Claims. (Cl. 257-9)

2,064,044. **COMBINATION COOLER, REFRIGERATOR, AND AIR CONDITIONER**. John C. Wichmann, Chicago. Application June 25, 1932, Serial No. 619,284. Renewed Dec. 20, 1934. 12 Claims. (Cl. 62-128)

2,064,131. **ICE CREAM FREEZER**. George E. Tuscan, Wollaston, and Wilfred F. Mathewson, North Weymouth, Mass. Application Jan. 2, 1934, Serial No. 704,902. 2 Claims. (Cl. 259-10)

2,064,141. **METHOD OF MAKING REFRIGERATING APPARATUS**. Joseph Askin, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo. Application March 16, 1934, Serial No. 715,933. 2 Claims. (Cl. 113-118)

2,064,233. **REFRIGERATION**. Albert R. Thomas, New York, N. Y., assignor, by mesne assignments, to Servel, Inc., Dover, Del. Application June 1, 1933, Serial No. 673,815. 26 Claims. (Cl. 62-119.5)

2,064,271. **REFRIGERANT CONDENSING APPARATUS**. Walter A. Schmidt and William Nadeau, Los Angeles, assignors to Holbrook Service Co., Los Angeles. Application Aug. 12, 1935, Serial No. 35,844. 3 Claims. (Cl. 257-37)

2,064,396. **AUTOMATIC REFRIGERATOR DEFROSTER**. Alexander S. Volpin, Houston, Tex., assignor to Servel, Inc., New York, N. Y. Application Aug. 27, 1934, Serial No. 741,635. 14 Claims. (Cl. 62-4)

2,064,412. **REFRIGERATED STORAGE COMPARTMENT**. Walter E. Carpenter, Belmar, N. J., assignor to The Dickerson Co., Newark. Application March 4, 1935, Serial No. 9,188. 7 Claims. (Cl. 62-99)

2,064,515. **REFRIGERATOR**. Charles F. Belshaw, Greenville, Mich. Application Feb. 8, 1934, Serial No. 710,207. 13 Claims. (Cl. 62-46)

2,064,597. **FREEZING AND DISPENSING APPARATUS**. Julius R. Engelmann, Jersey City, N. J. Application July 3, 1935, Serial No. 29,636. 11 Claims. (Cl. 62-114)

2,064,648. **PUMP OR COMPRESSOR**. Kenneth J. R. Cocke, Rugby, England, assignor to General Electric Co. Application Sept. 3, 1935, Serial No. 39,076. In

Great Britain Sept. 14, 1934. 11 Claims. (Cl. 230-206)

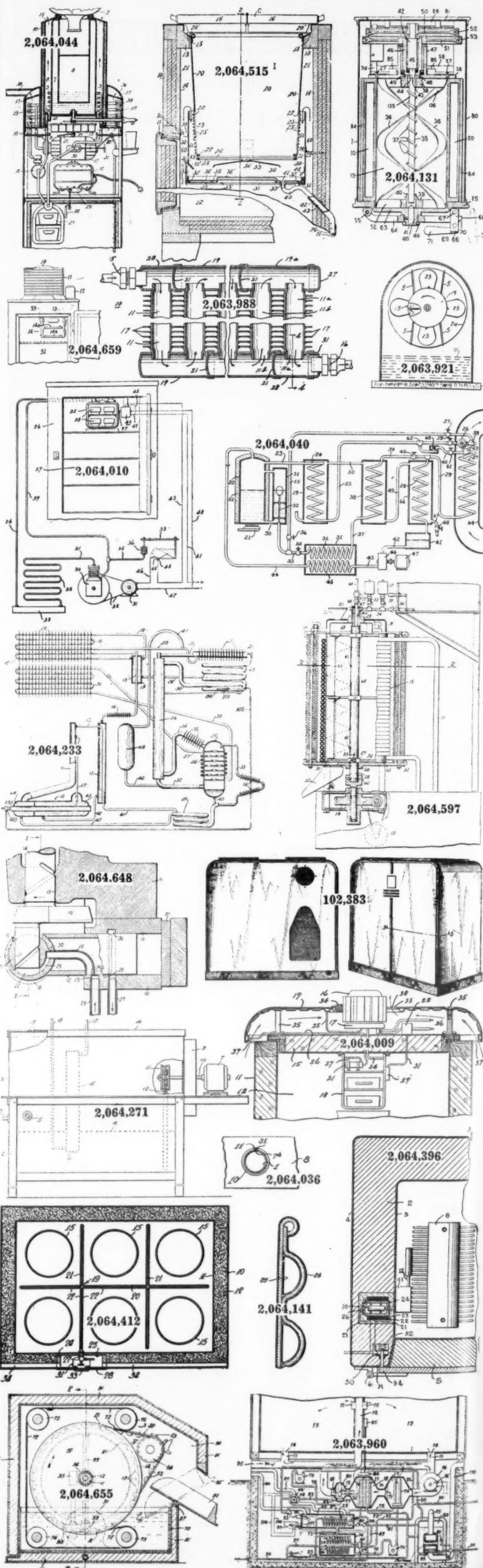
2,064,655. **CONTINUOUS FREEZING DEVICE**. Harvey D. Geyer, Dayton, assignor, by mesne assignments, to General Motors Corp., Detroit. Application Dec. 5, 1931, Serial No. 579,131. 18 Claims. (Cl. 62-105)

2,064,659. **EVAPORATOR FOR REFRIGERATING MACHINES**. Frank T. Grothouse, Fort Wayne, Ind., assignor to General Electric Co. Application Feb. 2, 1935, Serial No. 4,653. 16 Claims. (Cl. 62-126)

DESIGNS
102,383. **DESIGN FOR A CABINET FOR AN AIR CONDITIONING UNIT OR SIMILAR ARTICLE**. Allen P. Livar, Yonkers, N. Y. Application Sept. 21, 1936. Serial No. 64,945. Term of patent 7 years.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. **H. R. VAN DEVENTER (ASRE)**, Patent Attorney, 342 Madison Avenue, New York City.



Summary of Instalments Of Commercial Manual Already Published

Chapters 1 and 2 of the Commercial Service Manual by K. M. Newcum were omitted from the News, inasmuch as they are of basic material which has been previously covered in the paper, but will appear in the completed book scheduled to be published in April, 1937.

The following instalments have appeared to date:

Chapter 3, Cylinders, Valves, and

Safety Devices for Refrigerants—Aug. 5, 12, and 19.

Chapter 4, Methods of Transferring Refrigerants to Smaller Cylinders—Aug. 19.

Chapter 5, Drying of Refrigerants—Aug. 26.

Chapter 6, Commercial Condensing Units—Body and Housing Assemblies, Sept. 2; Crankshaft, Eccentric, and Connecting Rod Assemblies, Sept. 9; Piston and Piston Valve Assemblies, Sept. 16; Discharge Valve Assemblies, Sept. 23; Suction Valves and Stuffing Box Seals, Sept. 30; no instalment

published Oct. 7 and 14; Compressor Shaft Seals, Oct. 21; no instalment published Oct. 28; Compressor Shut-off Service Valves, Nov. 4; Air-Cooled Condensers, Nov. 11; Liquid Receivers, Nov. 18; Double-Tube Condensers and Water-Cooled Condenser-Receiver, Nov. 25; Water-Regulating Valves, Dec. 2, 9, and 16.

Chapter 7, Evaporators and Refrigerant Control Valves—Low-Side Float Valves and Evaporators, Dec. 23; Float Valve Calibration, Dec. 30; Types of Flooded Evaporators, Jan. 6; End Bunker Display Case Installations, Jan. 13.

COMMERCIAL REFRIGERATION SERVICE

Types of Coil Installations Used in Display Cases

CHAPTER 7—Evaporators & Refrigerant Controls (Cont.)

BY K. M. NEWCUM

The circulation is aided by the use of baffles as shown in Figs. 108 (a double-end or double-bunker case) and 109 (a single-bunker case). These baffles tend to direct the flow of the air. Circulation in this type of case is usually retarded by foodstuffs and platters that in reality block the top shelf.

This particular type of case is discussed not to belittle the earlier type flooded fin coils, but to bring to light the fact that with the coils located in the ends of a case, as illustrated, it is next to impossible to maintain low temperatures in the center of the top shelf and at the same time operate the system on a defrosting cycle. Another fact to consider is that if the coil temperature is lowered too much, freezing temperature will exist at the bottom of the case near the evaporators.

Many hours have been literally wasted by service men attempting to make this type of installation work. It is far better to be perfectly frank with the owner of such an installation and explain to him that he can never expect to obtain any better results as this principle defeats the purpose

of maintaining uniformly low temperatures through the case.

The same condition will be found with the center bunker case as illustrated in Fig. 110, except that the higher temperatures will be on the top shelf near the ends of the case.

More modern case design provides for the coils to be installed all along the top of the case above the product. In this case it is natural for the cold air to drop down and more uniform temperatures are obtainable. This design will be discussed later.

Another type of display case used back in the earlier days of fin flooded type commercial evaporators, was the back bunker top case as shown in Figs. 111 and 112. This type of case was originally designed for what is termed fast moving markets such as chain stores, where the cut meats on display were expected to be sold rapidly and replaced with new cuts and that all the meat was to be removed from the display case to the well insulated cooler at night. In other words, these top counters were principally display counters and not intended for storage purposes.

Fig. 113 shows the path of circula-

Back Bunker Cases

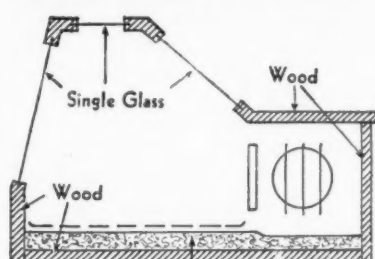


Fig. 111—Poor construction in back-bunker case.

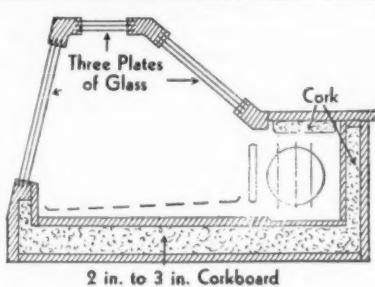


Fig. 112—Good construction of the type case shown in Fig. 111.

tion and the approximate temperature rise from the bottom of the bunker to the top of the display shelf. In most cases the display shelf is covered with trays which directs the circulation to the front of the case where a space should be provided to allow for circulation.

The design, construction, and insulation of these top counters have been greatly improved so that with the proper evaporator and compressor capacity and space for circulation, shelf temperatures of around 42° to 46° may be maintained with a defrosting cycle.

Here again the merchant may demand lower temperatures. They are obtainable at increased current cost and with manual defrosting.

Lower case temperatures which means colder evaporator surface and more rapid circulation will materially increase dehydration. Dehydration or drying out of the product is not much of a problem where the product is moving rapidly but becomes quite an item where the product remains in the case for an extended period.

Air Circulation

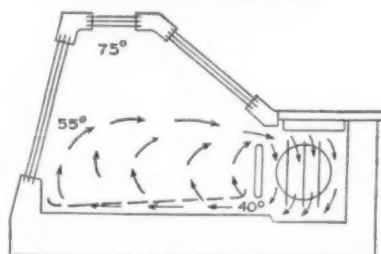


Fig. 113—Air circulation in back bunker installation.

Autovent Announces Several Changes in Personnel

CHICAGO—Several changes have been made in the personnel of Autovent Fan & Blower Co., manufacturer of ventilating and air-conditioning equipment.

Tom Brown has been promoted to the position of vice president and general manager; George J. Kalwitz, former sales engineer, is now general sales manager; Robert F. Ruggles, manager of the New York office, has been named eastern division manager.

Representatives recently appointed to handle Autovent's full line of propeller fans, blowers, and unit heaters, are: Frank B. Nimmo, Minneapolis; R. J. Engel, Appleton, Wis.; B. J. Doyle, Milwaukee; Industrial Representatives, Peoria, Ill.; Allan T. Shepherd, Richmond, Va.; Engineering Sales & Service Corp., Louisville, Ky.; and Harold M. Hudson, Seattle.

Double Bunker Installation

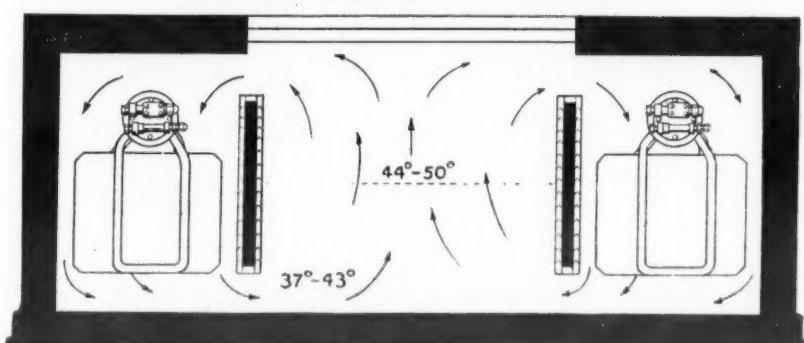


Fig. 108—How baffles influence circulation of air in double-bunker case.

Single Bunker Installation

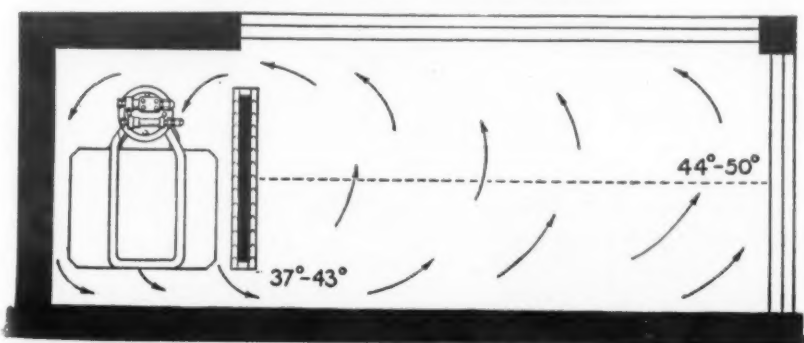


Fig. 109—Air circulation in single-bunker case.

Center Bunker Installation

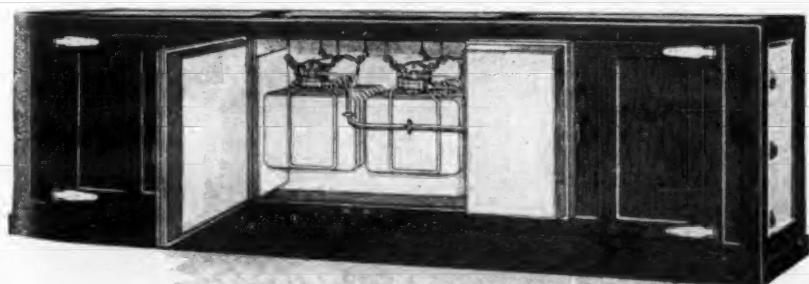
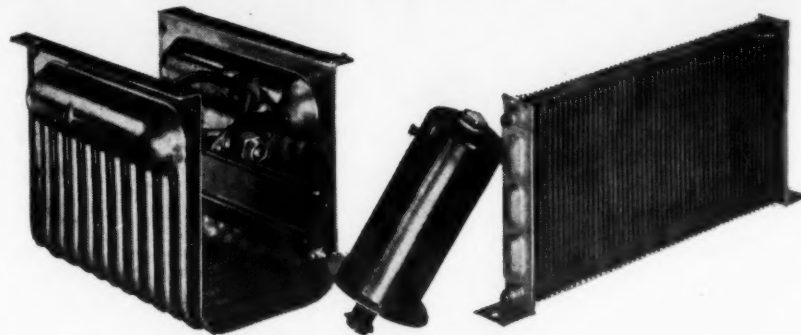


Fig. 110—Typical single-bunker coil installation in center of case.

BUYER'S GUIDE

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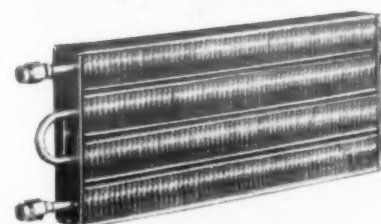
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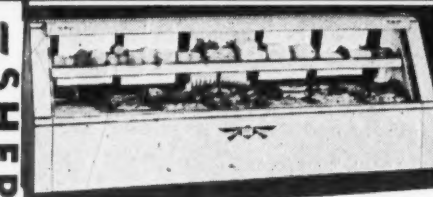
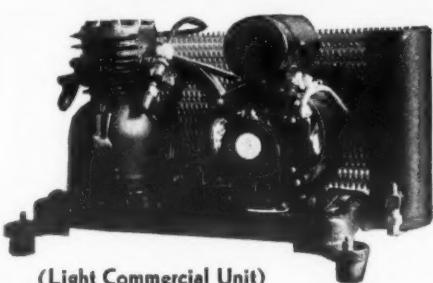
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MENTS than any other line. And every model a
precision unit of highest quality. Write for Bulletin
No. 655.**RANCO, Inc., Columbus, Ohio****RANCOSTAT****REMPE****FIN COILS - for Commercial Use****PIPE COILS & BENDS**

Rempe Company, 340 N. Sacramento Blvd., Chicago, Illinois

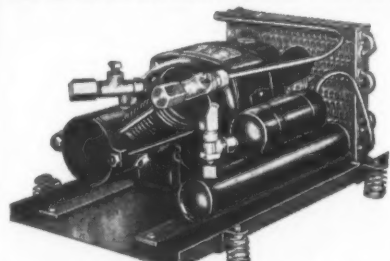
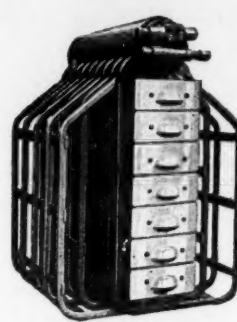
Commercial Condensing Unit...Model MRK-JR 1/2 or MRK-SR 1/2 HP.
U. S. Patents 1897907-1969237-2018067-2043176This entire unit is enclosed in a removable,
sound-proof metal hood. The compressor
assembly is independent of the motor, although
direct driven. If necessary, the compressor
assembly or motor may be changed independently.
The exclusive radial crankcase design permits
tilting to a 45° angle in order to save head
room, if necessary.Model MRK-JR is almost universal as a re-
placement condensing unit whenever a 1/2 hp
or a 1/4 hp unit should be used. Model MRK-
SR can be applied whenever a 1/2 hp unit is
required. Upon request, prices and any further
information will be gladly forwarded.**Commercial Refrigeration Co., Inc.**
55 South Avenue Rochester, N. Y.**THE RED BOOK**● Will reach the most important buyers
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Dealers, Jobbers, Service Organizations,
Installation Companies, Public Utilities.● In every mail new requests
come from active buyers in
every factor of the industry.● The most important of
them will be selected to receive these**5,000 COPIES****Danger of Impurities
In Methyl Chloride A
Stressed by McGovern**When methyl chloride "A" is used
as a refrigerant, it is especially
necessary that the system charged be
free of foreign materials, including
moisture, acidic bodies, and chemical
drying agents. Otherwise these ma-
terials may cause the warning agent,
Acrolein, in methyl chloride "A" to
change to a solid or gummy resinous
material, Acrolein Polymer, declares
E. W. McGovern, chief engineer of
the R. & H. Chemicals Dept., E. I.
du Pont de Nemours & Co., Inc.If such deposits as those mentioned
above are found in the refrigeration
system, says Mr. McGovern, the sys-
tem should be thoroughly cleaned and
dried and then given fresh charges
of oil and methyl chloride "A." The
oil used in such a system should be
well refined and of low acidity.Methyl chloride "A" is being used
to replace methyl chloride-sulphur
dioxide mixtures, says Mr. McGovern,
because of various diadvantages ac-
companying the use of sulphur di-
oxide as a warning agent.In making this change of refrig-
erant, it is imperative that all traces
of sulphur dioxide be removed, says
the R. & H. engineer. Reason for
this is that sulphur dioxide is acidic
in the presence of even a trace of
water and will rapidly cause Acrolein
to form solid deposits.Thoroughly flushing out the system
with dry air or with methyl chloride
vapor will remove the sulphur dioxide.
According to Mr. McGovern, flushing
with methyl chloride "A" vapor would
probably also be satisfactory, since
the small amount of residual sulphur
dioxide in the system would no doubt
be blown out before Acrolein Polymer
deposits had a chance to form.**Majestic Parts and
Service Purchased
By G. & G. Co.**CHICAGO—Parts and service for
all Grigsby-Grunow and Majestic refrig-
erators and radios manufactured prior
to 1936 has been bought by an organi-
zation headed by Irving I. Goldberg,
which will operate under the name of
G & G Genuine Majestic Refrigerator
& Radio Parts Service, with head-
quarters in the old Grigsby-Grunow
plant at 5801 Dickens Ave.Mr. Goldberg is president of Penn-
sylvania Pump Co., Philadelphia, man-
ufacturer of gasoline dispensing
pumps, and vice president of Pure
Aire Conditioning Co., manufacturer
of home and office air-conditioning
units. Pure Aire is a division of
Tucker-Dorsey Co., Indianapolis.Thomas Lavorene, formerly with
Grigsby-Grunow, is in charge of re-
frigeration and replacement service
for the new company; Albert Gatz is
in charge of radio parts and service.The G & G Co. has no connection
whatever with the present manufac-
turer of Majestic refrigerators and
radios, Mr. Goldberg emphasized. The
company is specializing only in selling
replacement units and parts for the
Majestic refrigerators and radios built
by the old Grigsby-Grunow Co.**Nassau Takes Over Grunow
Servicing in Northern N. J.**NEWARK—The Nassau Distribut-
ing Co., distributor of Grunow electric
refrigerators in this territory, has
taken over direct servicing of all
Grunow products in northern New
Jersey. A staff of factory trained
service men has been assembled to
handle the work.In the past, the company had han-
dled servicing of machines through
independent service men in various
parts of the territory. Owners of
Grunow refrigerators in the area have
been notified of the change in policy.**Early Frigidaire Commercial Cooling Units**

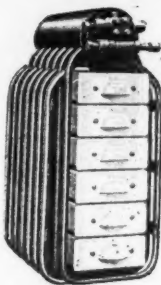
Fig. 106 of the Commercial Service Manual.



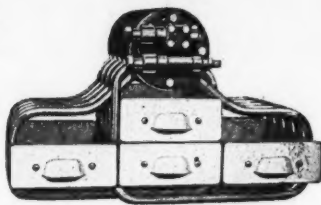
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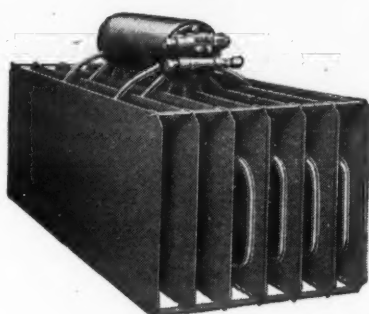
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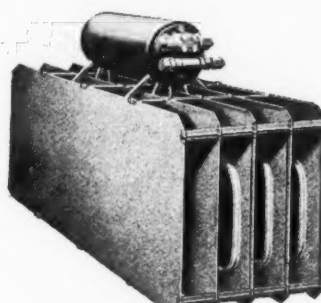
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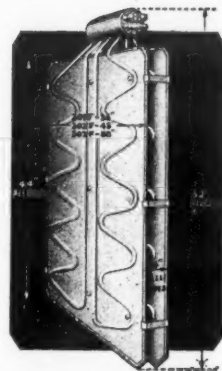
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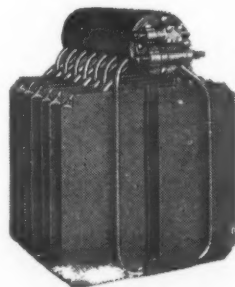
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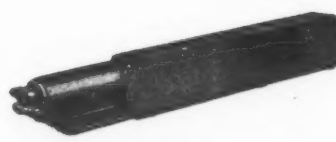
560F 570F Illustrated



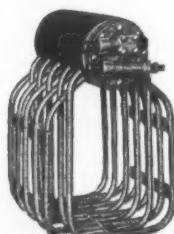
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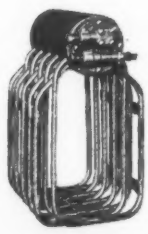
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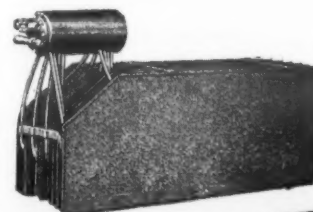
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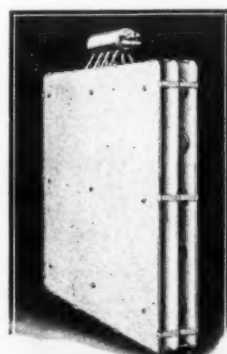
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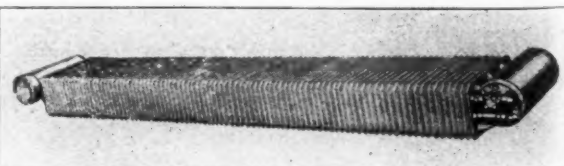
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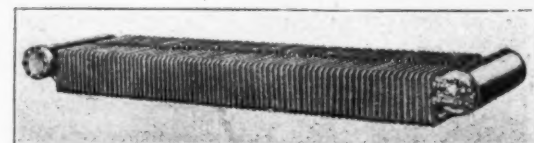
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1278F



1866F

Frigidaire Commercial Coil Model Data

Table 1 for the Commercial Service Manual.

Trays and Fins

| Coil No. | Overall Dimensions— | | No Trays, Cubes | | | Total Charge | |
|----------|---------------------|------------|-----------------|---------------|--------------|-----------------|--------|
| | 40° F. Box | 45° F. Box | Width Inches | Height Inches | Depth Inches | SO ₂ | Oil |
| 1 T.F. | 20 | 25 | 8 3/4 | 12 | 12 1/4 | 2-18 | 5 |
| 2 T.F. | 20 | 25 | 10 1/4 | 13 | 14 | 2-21 | 6 |
| 5 T.F. | 16 | 20 | 8 3/4 | 10 1/4 | 11 | 2-15 | 4 |
| 6 T.F. | 28 | 35 | 10 1/4 | 15 1/4 | 12 1/4 | 3-18 | 7 1/2 |
| 8 T.F. | 28 | 35 | 8 3/4 | 14 1/4 | 14 | 3-21 | 9 |
| 10 T.F. | 36 | 45 | 10 1/4 | 18 1/4 | 12 1/4 | 4-18 | 10 |
| 18 T.F. | 124 | 155 | 25 | 25 1/4 | 18 1/4 | 7-24 | 23 1/2 |
| 59 T.F. | 48 | 60 | 17 | 13 | 15 1/4 | 4-24 | 13 1/2 |
| 60 T.F. | 56 | 70 | 17 | 14 1/4 | 15 1/4 | 6-24 | 20 1/4 |
| 110 T.F. | 16 | 20 | 10 | 8 1/4 | 12 1/4 | 2-12 | 3 |
| 112 T.F. | 20 | 25 | 9 3/4 | 11 1/4 | 11 1/4 | 2-15 | 4 |
| 115 T.F. | 24 | 30 | 8 3/4 | 11 1/4 | 14 | 2-21 | 6 |
| 7 T.F. | 40 | 50 | 10 1/4 | 15 1/4 | 15 1/4 | 3-24 | 10 1/4 |
| 13 T.F. | ... | ... | 10 1/4 | 20 1/4 | 15 1/4 | 3-32 | 10 |
| 51 T.F. | ... | ... | 16 1/4 | 17 1/4 | 16 1/4 | 5-24 | 17 |
| 111 T.F. | 16 | 20 | 7 1/4 | 11 1/4 | 11 1/4 | 2-12 | 2 1/2 |
| 117 T.F. | 24 | 30 | 9 3/4 | 14 1/4 | 13 1/4 | 3-21 | 9 |

Trays Only

| Coil No. | Overall Dimensions— | | No Trays, Cubes | | | Total Charge | |
|----------|---------------------|------------|-----------------|---------------|--------------|-----------------|--------|
| | 40° F. Box | 45° F. Box | Width Inches | Height Inches | Depth Inches | SO ₂ | Oil |
| 4 | 24 | 30 | 10 | 12 | 12 1/4 | 2-18 | 5 |
| 6 | 28 | 35 | 6 3/4 | 14 1/4 | 12 1/4 | 3-18 | 7 1/2 |
| 8 | 28 | 35 | 6 3/4 | 14 1/4 | 14 | 3-21 | 9 |
| 10 | 36 | 45 | 6 3/4 | 17 1/4 | 12 1/4 | 4-18 | 10 |
| 12 | 48 | 60 | 10 | 17 1/4 | 15 1/4 | 4-24 | 13 1/2 |
| 14 | 52 | 65 | 10 | 20 | 15 1/4 | 5-24 | 17 |
| 16 | 60 | 75 | 10 1/4 | 22 1/4 | 15 1/4 | 6-24 | 20 1/4 |
| 18 | 80 | 100 | 17 | 25 1/4 | 18 1/4 | 7-24 | 23 1/2 |
| 54 | 36 | 45 | 19 1/4 | 12 | 12 1/4 | 4-18 | 10 |
| 58 | 40 | 50 | 19 1/4 | 12 | 15 1/4 | 4-24 | 13 1/2 |
| 59 | 40 | 50 | 16 | 12 | 15 1/4 | 4-24 | 13 1/2 |
| 62 | 80 | 100 | 40 | 14 1/4 | 18 1/4 | 7-24 | 23 1/2 |
| 60 | 52 | 65 | 16 | 14 1/4 | 15 1/4 | 6-24 | 20 1/4 |

Without Trays or Fins

| Coil No. | Overall Dimensions— | | No Trays, Cubes | | | Total Charge | |
|----------|---------------------|------------|-----------------|---------------|--------------|-----------------|-----|
| | 40° F. Box | 45° F. Box | Width Inches | Height Inches | Depth Inches | SO ₂ | Oil |
| 4X | 24 | 30 | 10 | 12 | 12 1/4 | 5 | 1 |
| 6X | 28 | 35 | 6 3/4 | 14 1/4 | 12 1/4 | 5 1/2 | 1 |
| 10X | 36 | 45 | 6 3/4 | 17 1/4 | 12 1/4 | 6 | 1 |
| 64X | 36 | 45 | 19 1/4 | 12 | 12 1/4 | 7 | 1 |

Flanged Coils for Brine Tanks

| Coil No. | Remarks | Overall Dimensions— | | | Charge SO ₂ | Charge Oil |
|----------|------------------------------|---------------------|---------------|--------------|------------------------|------------|
| | | Width Inches | Height Inches | Depth Inches | | |
| 2X | 2 T.F. without Trays or Fins | 6 3/4 | 12 | 14 | 5 | 1 |
| 19X | 20X with L.H. Valve | 7 1/2 | 18 1/4 | 12 1/4 | 6 | 1 |
| 20X | Short I.C. Coil R.H. Valve | 7 1/2 | 18 1/4 | 12 1/4 | 6 | 1 |
| 21X | Squat I.C. Coil R.H. Valve | 7 1/2 | 13 1/4 | 18 1/4 | 9 | 1 |
| 29X | ... | 7 1/2 | 10 1/4 | 13 1/4 | 6 | 1 |
| 30X | 30X with L.H. Valve | 7 1/2 | 10 1/4 | 13 1/4 | 6 | 1 |
| 31X | ... | 7 1/2 | 10 1/4 | 19 1/4 | 9 | 1 1/2 |
| 33X | ... | 7 1/2 | 10 1/4 | 19 1/4 | 9 | 1 1/2 |
| 129X | Short Boiler | 8 | 14 1/4 | 12 1/4 | 6 | 1 |
| 130X | ... | 8 | 14 1/4 | 18 1/4 | 9 | 1 1/2 |
| 131X | Long Boiler | 8 | 14 1/4 | 12 1/4 | 9 | 1 1/2 |
| 133X | ... | 8 | 14 1/4 | 18 1/4 | 6 | 1 |
| F130X | 31X with L.H. Valve | 8 | 14 1/4 | 18 1/4 | 9 | 1 1/2 |
| F131X | ... | 8 | 14 1/4 | 18 1/4 | 10 | 1 |
| 22X | Long I.C. Coil | 7 1/2 | 18 1/4 | 18 1/4 | 9 | 1 |
| 23X | 21X with L.H. Valve | 7 1/2 | 13 1/4 | 18 1/4 | 4 | 1 |
| 25X | Special 2H. Port. | 7 1/2 | 13 | 12 1/4 | 4 | 1 |
| 26X | Special Soda Fountain | 7 1/2 | 13 1/4 | 12 1/4 | 5 1/2 | 1 |
| 121X | Special 4H. Port. | 8 | 15 | 18 1/4 | 9 | 1 |
| 123X | ... | 8 | 15 | 18 1/4 | 9 | 1 |
| 126X | ... | 8 | 15 | 12 1/4 | 5 1/2 | 1 1/2 |
| 81F | J. Fin Coil R.H. Valve | 6 1/2 | 5 1/4 | 46 | 5 | 1 |
| 82X | J. Coil | 7 1/2 | 8 | 37 1/2 | 6 1/2 | 1 |
| 87F | J. Fin Coil R.H. Valve | 6 1/2 | 5 1/4 | 66 1/4 | 5 1/2 | 1 |
| 91 | 81F with L.H. Valve | 6 1/2 | 5 1/4 | 46 | 5 | 1 |
| 92F | 87 with L.H. Valve | 6 1/2 | 5 1/4 | 66 1/4 | 5 1/2 | 1 |
| 44F | ... | 7 1/2 | 7 1/2 | 48 | 5 | 1 1/2 |
| 45F | ... | 7 1/2 | 7 1/2 | 60 | 5 1/2 | 1 1/2 |
| 46F | ... | 7 1/2 | 7 1/2 | 72 | 6 1/2 | 1 1/2 |

Expansion Coil

| Coil No. | Remarks | Overall Dimensions— | | | Charge SO ₂ | Charge Oil |
|----------|---------|---------------------|---------------|--------------|------------------------|------------|
| | | Width Inches | Height Inches | Depth Inches | | |
| E-3 | ... | 10 | 12 1/2 | 11 1/4 | ... | ... |
| E-4 | ... | ... | ... | ... | ... | ... |
| E-5 | ... | 9 1/4 | 15 1/4 | 10 1/4 | ... | ... |

Finned Coils

| Coil No. | Overall Dimensions— | | No Trays, Cubes | | | Total Charge | |
|----------|---------------------|------------|-----------------|---------------|--------------|-----------------|-------|
| | 36° F. Box | 40° F. Box | Width Inches | Height Inches | Depth Inches | SO ₂ | Oil |
| 12 F | 89 | 100 | 15 1/4 | 17 1/4 | 15 1/4 | 8 | 1 1/2 |
| 14 F | 105 | 118 | 15 | 20 | 15 1/4 | 8 1/2 | 1 1/2 |
| 16 F | 122 | 137 | 16 1/4 | 22 1/4 | 15 1/4 | 8 1/2 | 1 1/2 |
| 17 F | 205 | 230 | 16 1/4 | 30 | 18 1/4 | 11 1/2 | 2 |
| 18 F | 147 | 165 | 25 | 25 1/4 | 18 1/4 | 11 | 2 |
| 24 F | 100 | 112 | 6 1/4 | 29 1/4 | 17 1/4 | 7 | 1 |
| 58 F | 82 | 92 | 27 1/4 | 12 | 15 1/4 | 8 | 1 1/2 |
| 62 F | 133 | 147 | 48 | 14 1/4 | 18 1/4 | 11 | 2 |
| 63 F | 261 | 290 | 48 | 8 | 15 1/4 | 9 | 1 1/2 |
| 74 F | 82 | 91 | 5 | 5 | 48 | 5 | 1 1/2 |
| 75 F | 102 | 113 | 5 | 5 | 60 | 5 1/2 | 1 1/2 |
| 76 F | 122 | 136 | 5 | 5 | 72 | 6 1/2 | 1 1/2 |
| 78 F | 163 | 181 | 5 | 5 1/4 | 96 | 8 | 1 1/2 |
| 83 F | 63 | 70 | 5 | 7 1/4 | 47 1/4 | 4 1/2 | 1 |
| 84 F | 104 | 116 | 5 | 7 1/4 | 77 1/4 | 5 1/2 | 1 |
| 85 F | 40 | 45 | 5 1/4 | 5 | 48 | 5 | 1 |
| 86 F | 40 | 46 | 5 1/4 | 5 | 48 | 5 | 1 |
| 88 F | 227 | 255 | 15 1/4 | 19 1/4 | 45 1/4 | 12 | 2 |
| 89 F | 83 | 92 | 5 1/4 | 5 | 72 | 6 1/2 | 1 |
| 90 F | 83 | 92 | 5 1/4 | 5 | 72 | 6 1/2 | 1 |
| 93 F | 83 | 92 | 5 | 5 | 62 1/4 | 5 | 1 |
| 94 F | 63 | 70 | 5 1/4 | 5 1/4 | 60 | 6 | 1 |
| 95 F | 129 | 145 | 10 1/4 | 19 1/4 | 41 1/4 | 8 1/2 | 2 |
| 96 F | 339 | 380 | 22 1/4 | 19 1/4 | 45 1/4 | 14 | 2 |
| 301 F | ... | 232 | 8 1/4 | 62 | 36 | 13 1/2 | 2 |
| 302 F | ... | 267 | 8 1/4 | 62 | 45 | 14 1/2 | 2 |
| 303 F | ... | 367 | 8 1/4 | 62 | 58 | 17 1/2 | 2 |
| 550 F | 72 | 80 | 18 | 5 | 12 1/4 | 5 | 1 |
| 560 F | 168 | 187 | 42 | 5 | 12 1/4 | 11 | 2 |
| 570 F | 216 | 240 | 66 | 5 | 12 1/4 | 13 | 2 |
| 15 F | ... | 129 | 17 | 22 1/4 | 15 1/4 | 10 | 1 1/2 |
| 19 F | ... | 250 | 18 | 21 1/4 | 18 1/4 | 12 | 1 1/2 |
| 20 F | ... | 371 | 8 | 27 1/4 | 17 | 9 1/2 | 1 |
| 1220 F | ... | 188 | 20 | 6 1/4 | 12 1/4 | 5 | 1 |
| 1230 F | ... | 81 | 30 | 6 1/4 | 12 1/4 | 6 | 1 |
| 1242 F | ... | 121 | 42 | 6 1/4 | 12 1/4 | 9 1/2 | 2 |
| 1254 F | ... | 161 | 54 | 6 1/4 | 12 1/4 | 11 | 2 |
| 1266 F | ... | 225 | 66 | 6 1/4 | 12 1/4 | 12 1/2 | 2 |
| 1278 F | ... | 340 | 78 | 6 1/4 | 12 1/4 | 14 | 2 |
| 1842 F | ... | 225 | 42 | 6 1/4 | 18 1/4 | 14 | 3 |
| 1854 F | ... | 312 | 54 | 6 1/4 | 18 1/4 | 16 | 3 |
| 1866 F | ... | 391 | 66 | 6 1/4 | 18 1/4 | 18 | 3 |

General Electric Selects Five New Vice Presidents

SCHENECTADY—Five new commercial vice presidents have been elected by the board of directors of General Electric Co., according to President Gerard Swope. They are:

M. O. Troy, Schenectady, manager of the central station department; L. T. Blaisdell, Dallas, southwestern district manager; E. H. Ginn, Atlanta, southeastern district manager; A. L. Jones, Denver, Rocky Mountain district manager; T. S. Knight, Boston, New England district manager.

Mr. Troy entered G-E's testing department in 1897, soon being made foreman of transformer test. In 1898 he became associated with Professor Elihu Thomson and Richard Fleming, in pioneer work on constant current transformers. In 1901 Mr. Troy was made assistant engineer of the Lynn alternating-current engineering department, and was later transferred to the transformer sales department. In 1907 he became sales manager of transformers, lightning arrestors, and regulators. In 1923, when the lighting department became the central station department, he was appointed executive assistant manager. He became manager of this department in 1928, and now is also a member of the company's sales committee.

Mr. Blaisdell, who has been with the company since 1904, was manager of G-E's Washington office for some time. Since 1924 he has been district manager at Dallas.

Mr. Ginn joined the company in 1901, and has been district manager at Atlanta since 1922.

Mr. Jones also joined the company in 1904, and spent three years in the testing department before being transferred to the Denver office as district engineer. In 1928 he became district manager there.

Mr. Knight, with G-E since his graduation from college in 1903, has been New England district manager since 1926.

Perry Co. Opens New Sales And Showrooms

JERSEY CITY, N. J.—R. H. Perry & Co., local Frigidaire distributor, opened new sales and showrooms here on Jan. 11.

George K. Westhead has been appointed sales manager of the firm's new automatic equipment division. This division, in addition to the fuel business that it has been conducting here for 58 years, is now distributing Delco-Frigidaire products.

The new division will be under the direct supervision of B. E. Niese, president, and O. H. Perry, assistant secretary of the company.

Apex Acquires Sandusky Washing Machine Plant

SANDUSKY, Ohio—Holland Reiger, Inc., local washing machine manufacturer, has been acquired by Apex Electrical Mfg. Co., according to announcement by Apex officials.

The announcement stated that business of the Sandusky firm would be continued under the same policies and with the same personnel. Possible plant expansion is contemplated.

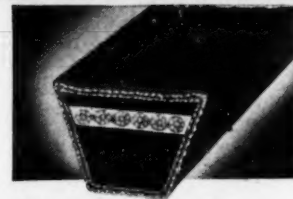
Sydney Kelvinator Distributor Puts Equipment to Work

SYDNEY, Australia—When one steps into the big store of David Jones, Ltd., distributor for Kelvinator in the Sydney metropolitan area, he will find Kelvinator equipment in general use.

Showcases, soda fountains, and cold rooms are refrigerated by means of Kelvinator commercial equipment. To handle all of this, nine condensing units are employed. The showcases are all of the single-glass type, including two upright windows, which are refrigerated with a forced convection coil in the bottom of the case. Draft is admitted to the case through ducts in the bottom of the cabinet.

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